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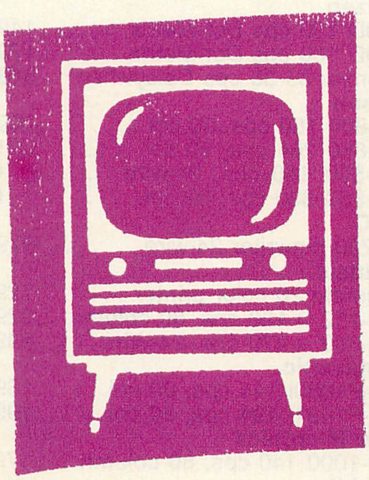
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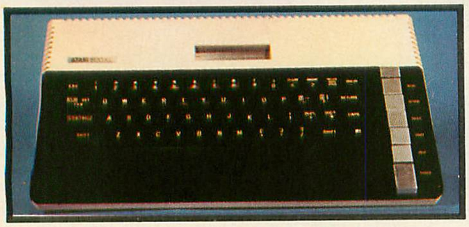


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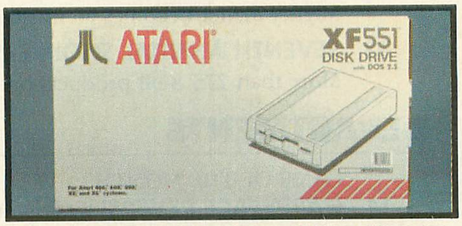
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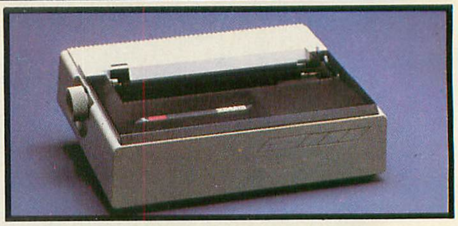
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New Antic 8-Bit Catalog—Bigger Than Ever

So now it's up to you . . .



Many longtime Atari users remember that dark day in 1984 when Atari announced the closing of APX, the Atari Programmers Exchange. APX had been a major source of great software that was considered too "specialized" to make it into normal commercial channels. All the APX programs were about to disappear, but **Antic** moved quickly. We thought that our readers could rescue the APX software, so we formed the Antic Arcade to help.

And you proved we were right! You bought Arcade products and kept the APX titles alive. The Antic Arcade was successful from the first day. It grew rapidly and became The Catalog. The Catalog grew and became Antic Software, which has grown into a major independent software developer supporting several computer brands.

In the meantime, we have not forgotten our roots in the Atari 8-bit market. We see the 8-bit retail channels drying up. Major manufacturers will no longer support the 8-bit. Small manufactures cannot get distribution. Retailers will not give Atari products shelf space. Atari owners cannot find the software they need. What's the answer?

We think it's time for the Antic Arcade again. We think you readers can rescue the Atari retail market! So we're taking the first step. We re-opened the Antic Arcade and are making it bigger than ever.

The Arcade is seeking out warehoused Atari products from the major manufacturers. We are locating the existing stocks of discontinued products. We are negotiating the re-manufacture of abandoned products. We are finding and preserving "lost" programs for reissue. Tragically, some fine programs appear to be gone forever. The source code and even the production masters have been destroyed. We are trying to prevent further destruction of valuable Atari 8-bit software.

We're actively seeking out smaller developers. Professional programs are being written today which are superior to anything from the past. They are often being sold mail-order from the programmer's kitchen table. We want to provide these programs the distribution they deserve.

The Antic Arcade will deliver the best products for your Atari. Of course, the full line of programs we already developed for The Catalog is back again. Four years of development here produced more than 50 great software titles covering the spectrum from programming tools to exciting entertainment and educational enhancement.

Here at **Antic** we are doing our part to keep the 8-bit Atari alive. But the Arcade will only succeed if you do your part too. Let us know that you want the Arcade to continue by placing your first order today. Tell your friends. Tell your users group. The future of the Antic Arcade—in fact, the whole future of 8-bit Atari software in North America—is now up to **Antic** readers like you!

Nat Friedland

Nat Friedland
Editor, **Antic**

POSITRONIC PRICES

Correct prices for three Positronic Software titles listed on the November 1988 ST New Products should have been: GradePlus, $39.95; Test Maker, $39.95; SeaChest Library, $19.95—ANTIC ED

CREATION CORRECTION

Our group is elated that one of our students won the grand prize in the *Adventure Creation Contest* (**Antic**, October 1988). But I was given credit instead of the actual programmer, Aaron Kramlich, a teenager from Fogelsville, PA. I am a retired school psychologist, having served the Allentown schools for 30 years. (Their elementary schools use Ataris.)

Robert "Dr. Bob" Loux, Ph.D.
Allentown, PA

DISK DOCS

How do I create disk text files like those on your fine Catalog products?

Alan Johnson
Johnstown, PA

Prepare your document with any word processor (such as PaperClip) that can print a file to disk. Set your left margin to 0 and your right margin to 37. Then print the file to disk.—ANTIC ED

XEP80 HANDLER

In Matthew Ratcliff's *XEP80 Slide Show* (**Antic**, October 1988), he said, "You can forget about 80-column compatibility with ICD/OSS software such as BASIC XL and BASIC XE."

I'm here to tell you that before ICD acquired OSS, the OSS bulletin board carried a BASIC XE handler for the XEP80. I use it myself, and it's 100% compatible with BASIC XL/XE.

Terry Ortman
Decatur, IL

BRAIN CORRECTION

After writing *Atari Brain Transplants* (**Antic**, November 1988), I discovered that the Newell upgrade is not really compatible with XLEnt Software's Typesetter. The program writes only one half page at a time, and when you switch to the bottom half, the top half continues to be displayed even though you are writing to the bottom half. Presumably this is because the ANTIC chip is trapped in main RAM while in the true 130XE it can be switched into extended banks.

Lee Brilliant, M.D.
Granada Hills, CA

SLCC ADDRESS

Your June 1988 issue mentioned that the San Leandro Computer Club Journal had an article about how to modify the Atari XF551 disk drive for use with 3 1/2 inch disks. Could you please give me their mailing address?

Capt. John Glessner
KAFB, NM

SLCC is at P.O. Box 1506, San Leandro, CA 94577.—ANTIC ED

XEP80 TIP

I bought a switch box with two "ins" and one "out." My XEP80 monitor cable goes in one side. My Atari's monitor cable is split so that the video side goes into the switch box and the audio goes into the monitor. Instead of booting 40-column software with [SHIFT] held down and (usually) without printer use, I now boot with the switch box on and use the printer—just like before I added the XEP80 to my system. Note that with this arrangement, the XEP80 never needs to be turned off. You can turn off the computer without turning off the XEP80 and its display will stay on the screen.

Kevin Evart
Spokane, WA

IC CLARIFICATION

Thank you for the excellent review of Easy Scan in your October 1988 issue.However, only Innovative Concepts was mentioned. Actually it was a joint venture also involving Jim Steinbrecher of Sector One Computers. He's the original author of AMODEM.

Due to popular demand (and your review), we will be adding Graphics 9 capability to the Easy Scan software as soon as possible. IC now is on Data Library 15 in the Atari 8-bit section of CompuServe. Our new CompuServe ID is 76004,1764.

Mark Elliott, President
Innovative Concepts

CROSS-TOWN CRAZY 8

I was pleased to see the generally favorable review of my game program, "Cross-Town Crazy Eight" in the October 1988 **Antic**. However, I must correct some mistakes.

While the 8-bit version of the game does support a Hayes-compatible modem with an 850 interface, P:R: Connection or equivalent, it also supports the Atari XM301 and 1030 modems automatically, without user interaction, as stated on the dust jacket and in the documentation.

Regarding the 8-bit version, the review says that "placing the cursor on a card and pressing the button to select it renders the card almost invisible!" Not quite true. The card "fades" somewhat to indicate the selection. If you can't tell or don't remember what the card is, just click on it again to deselect it.

The review also says that "if you don't release the joystick button fast enough, it reads multiple button presses." Also not true. Only the first button press is read until you release the button.

Later, the review says that in the ST version, "you can quit at any time, get information about the game in progress and load a saved game. (Most of these functions are not available on the 8-bit version.)" In fact, the only function listed

above that is *not* available on the 8-bit version is game information.

Finally, the reviewer was disgruntled that the game let you play an eight on an eight. According to Hoyle (specifically, "Hoyle Up-To-Date," published by Grosset & Dunlap, New York), on page 38: "An eight may be played on an any preceding card, *regardless* of its suit and rank." Grated, other liberties were taken with the standard rules of Crazy Eights, but after all, this is Cross-Town Crazy Eight, a computer game, not Crazy Eights, a card game.

Patrick Dell'Era
Fairfax, CA

WHERE'S A MEGA

I couldn't find a dealer who sold the Atari Mega 2, so I phoned Atari. The representative, while very courteous, shocked me by saying that there aren't any Mega dealers in the Northern New Jersey area and that the nearest one was over 100 miles away.

I live about 15 miles from New York City—and was even more shocked to learn that there aren't any Mega dealers there, either, despite a population of about 8 million and at least 20 computer stores.

How can I buy one of Atari's new computers if I can't even find a store that sells one? Not only that, but I'm also told that Atari has stopped selling their 1040STs through mail order companies, so how can I shop around for the best price?

Kenneth Castka
Wyckoff, NJ

***Antic** is not in business to defend the Atari Corp. against points as well taken as yours. We too would like to see the Atari management find more consistent ways to deliver on Chairman Jack Tramiel's oft-declared goal of making powerful, lower-priced computers easily available to the general public. At this writing, Atari is still in process of a widespread reorganization of its distribution channels and the ultimate efficiency of the new marketing system remains unproven.*—ANTIC ED

RAMDISK HELP

I'm responding to John Kolak's letter in the August 1988 **Antic** where he discusses using AtariWriter with a RAMdisk, MyDOS and Omniview.

MyDOS and Omniview 256 support RAMdisks and can do so independently of each other as long as memory and drive numbers are organized to avoid conflicts. Omniview uses memory from the bottom up, and MyDOS can be told which banks to use—leaving Omniview alone. When the Omniview RAMdisk is used, for instance, as D2:, then real D2: becomes D3:, and so on. If the MyDOS RAMdisk is used as D3:, then it will actually replace the real D2: (moved to D3:). It's best not to have a real drive with the same number as the MyDOS RAMdisk.

Sticking with standard single-density disks, you can set up two RAMdisks easily. A standard Omniview RAMdisk will occupy about 96K, leaving MyDOS with everything above that. Just configure MyDOS with the device number and a list of the high banks to use. Don't forget to configure the Omniview RAMdisk as the proper drive number. Then write the DOS files to disk.

Keep in mind that MyDOS doesn't allow the J option to duplicate files, so you must use the C option to copy them instead.

Mr. Kolak has his support files in the RAMdisk and wants to move his dictionary there as well. The Atari Proofreader program requires the dictionary to be in real D1: Since it must be duplicated—most dictionaries don't use standard DOS files—only the Omniview RAMdisk will work (if used as D1:). But the Proofreader uses the physical drive, bypassing DOS and Omniview. To use the dictionary from the RAMdisk, Mr. Kolak will have to make patches to Proofreader so it will use standard DOS calls to the CIOV instead of the SIO, etc. Surely this is more trouble than it's worth. And don't forget the conflict of using the dictionary as D1: while also using D1: to store the support programs.

Rick Detlefsen
Austin, TX

NX AGREEMENT

I have noticed the change in the slant of your reviews. They seem more complete now, with more willingness to give a negative report when warranted (i.e. the Star NX-1000 printer). I started buying your magazine in 1985 for your opinions. If this trend continues, I will definitely renew my lapsed subscription. Keep up the good work.

Daniel Suthers
Concord, CA

HELP

P/M GRAPHICS STUDIO

In *P/M Graphics Studio* (September 1988), the GETTING STARTED section of the article is incomplete and the opening paragraphs should read as follows:

"Type in Listing 1, PMED.BAS, checking it with TYPO II and SAVE a copy before you RUN it. Next, type in Listing 2, PMED.ANM, checking it with TYPO II and SAVE a copy before you RUN it.

"If you have trouble typing the special characters in lines 30001-30002 *in either listing*, don't type them in. Instead, type Listing 3, check it with TYPO II and SAVE a copy. When you RUN Listing 3, it creates these hard-to-type lines and stores them in a file called LINES.LST. LINES.LST may be merged with *either* Listing 1 or Listing 2."

Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

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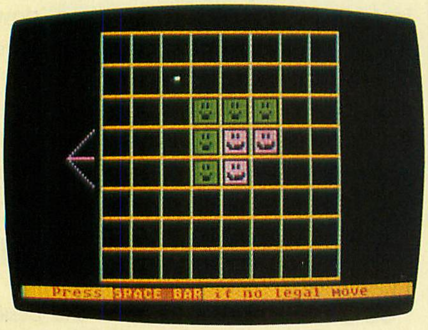
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Happyface Reversi

Put a smile on your squares *By Edward Brown*



Happyface Reversi puts a smile on your squares as you battle to convert the playing board to your color. For one or two players. This BASIC program works on 8-bit Atari computers with at least 48K memory, disk or cassette.

Happyface Reversi is a challenging computerized version of the old board game Reversi, which was recently re-popularized under the name "Othello." You can play against your hard-to-beat Atari, watch your Atari play against itself, or take on a human opponent, setting as many four levels of handicaps if you wish.

The object of Reversi is to cover the majority of squares on an 8×8 board with pieces in your own color, outflanking rows of your opponent's pieces and reversing them into your color. The player who has the most squares at the end of the game wins. (A tie of 32 squares apiece is also possible.)

Just for fun, and for a slightly unusual graphic look, I put a different version of the overly familiar happyface logo into each of the two opposing colored teams of squares. When you reverse a square's color, you also change its happyface smile.

GETTING STARTED

To play Happyface Reversi, type in Listing 1, REVERSI.BAS, check it with TYPO II and SAVE a copy before you RUN it.

Here's how it works. The main program loop begins at line 1535. Computer moves are determined in the large subroutine starting at line 660 by maintaining a VALUE matrix of the desirability of each position on the board. The Happyface Reversi program searches for the most desirable legal move available using this matrix and the current board positions.

PLAYING REVERSI

At the title screen, press [START] to play. You'll first be prompted to indicate who controls each player's moves, the computer or a human opponent. The program then asks if you want to set up a handicap for one of the players by giving an initial one-corner to four-corner advantage. To continue, make your selection.

Happyface Reversi now draws the playing board onscreen and sets up the initial positions, including handicap corners. Purple always moves first and is controlled by a joystick plugged into port 1. Green is con-

trolled by a joystick in port 2. The colored arrows on the sides of the screen indicate which player has the next move.

Move the white cursor to the desired square on the board and press the joystick button. If you attempt an illegal move, the computer will buzz. If you have no legal move, press the [SPACEBAR] to pass on your turn.

To legally outflank your opponent, place your pieces on the board so that your color is on both ends of a row of your opponent's pieces, or on opposite sides of an opponent's single piece. All of the outflanked pieces will be changed to your color and your happyface. Any number of pieces can be outflanked with one move, in any direction including diagonally, and even in more than one row. To really get the hang of Reversi, set the computer to play against itself and observe the moves.

Players alternate moving single pieces until all 64 squares are occupied, or till neither player has a legal move, or till all pieces on the board are of the same color. The player with the most squares wins. The final score is displayed at the bottom of the screen and the borders of the board flash the victor's color. To start a new game, hold down either joystick button.

The player with the most squares wins.

You can switch player control between human and computer in the middle of a game by pressing [OPTION] or [SELECT] or [START] after a prompt, or while the program is waiting for joystick movement.

REVERSI STRATEGY

Corner positions are very valuable, because they cannot be outflanked and can be used as ends for rows extending in three directions. Squares on the edges of the board are also valuable, since they can only be outflanked along the same edge. Getting a complete edge of your color can provide an armored rearguard for outflanking your opponent in the middle of the board.

The move that outflanks the largest number of opponent's pieces is not always necessarily the best move. Smaller strategic moves can often give a big payoff later in the game.

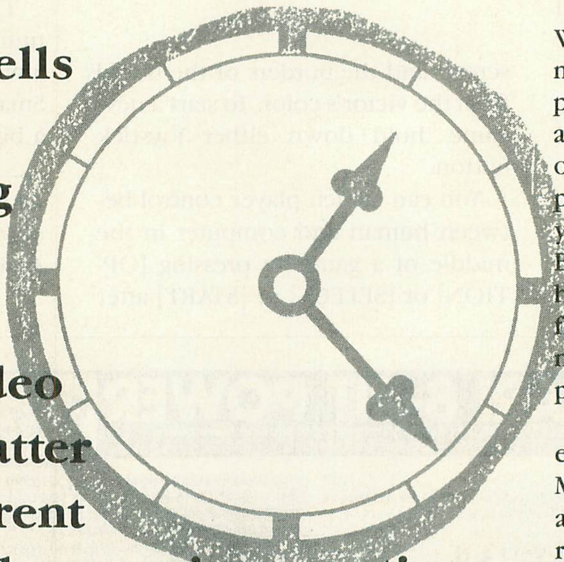
Ed Brown is a computer science major at Indiana-Purdue University. His first **Antic** *appearance was in December 1984.*

Listing on page 74

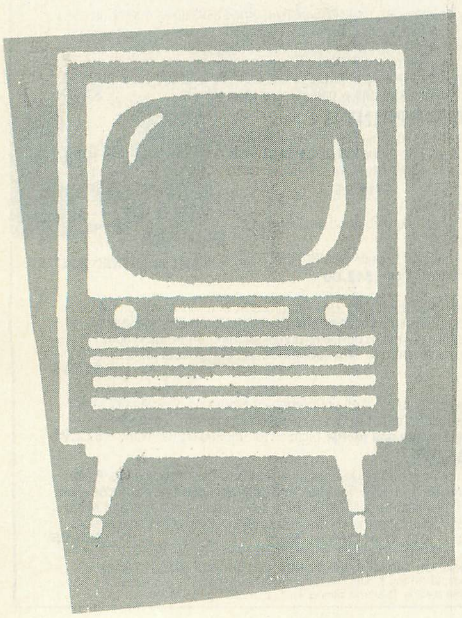
TapeTime

Will the whole movie fit?

By Paul Shannon



TapeTime tells you how much recording time you have left on your VHS or Beta video cassettes, no matter how many different speeds you used on various sections of the tape. You'll never again lose those climactic movie scenes. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.



Wouldn't you know it? You wait months to see "Heebie Jeebie Hotel," possibly the scariest movie ever made, and they decide to show it at 5 a.m. on cable. So you find a tape that appears to have enough room on it and you set your video cassette recorder. But the next day, guess what? You have all but the final 10 minutes of the film—the tape ran out. Now you'll never know who skinned those poor people alive with a potato peeler.

If you use your VCR a lot, undoubtedly you have a lot of video tapes. Many of these tapes still have room at the end—but how much? If you recorded two 30-minute programs on a VHS tape in high-speed mode, it's not too difficult to figure that since a VHS tape has a total time of two hours in this mode, you have an hour left.

But what if you recorded one program in extended play mode, the slowest speed, and another program at standard speed? Now you have an 84-minute movie you want to record. Which speed could you use and not lose part of the movie?

GETTING STARTED

TapeTime enables your 8-bit Atari to compute the amount of time left on a video tape, in all commonly used speeds on VHS or Beta formats. This is the first program I wrote and it has proven to be a great help in organizing my video collection.

Type in Listing 1, TAPETIME.BAS, check it with TYPO II and save a copy before you RUN it.

TapeTime computes for both VHS and Beta formats. After you choose one or the other, TapeTime will ask for the length of the tape you're using—T-120 or T-160 for VHS, L-750 or L-830 for Beta. These are the most common tape lengths.

Next, you're prompted to enter the times for each program in each speed. VHS video tape recorders usually have three recording speeds. SP (Standard Play) is the fastest and gives best picture quality. Slower LP (Long Play) has slightly less picture quality. EP (Extended Play) gives the least picture quality, but has the most recording time. NOTE: Some VHS recorders don't have LP and on some machines the EP speed is called SLP (Super Long Play). Most Beta recorders have two speeds: BII is the fastest and has best quality, while BIII yields the largest amount of tape time.

Suppose you have a T-120 VHS tape that has 10-minute and seven-minute music videos in SP, three 30-minute situation comedies in LP and a 104-minute movie in EP. TapeTime will first ask you to enter the minutes SP. So you'd type 10 and press [RETURN], then type 7 and press [RETURN]. When you're done entering programs for one play mode, type 0 and press [RETURN] to go to the next speed.

Now enter 30 and [RETURN] for each LP sitcom. Type 0 to move to EP, enter 104, press [RETURN] and type 0 again. Then you'll be told that you have 23.33 minutes left at SP, 46.67 minutes at LP and 70 minutes at EP. Now you can either continue timing more tapes or print these results.

TapeTime converts the time in each play mode to meters of tape. If you enter too many minutes for a tape, the result will be a negative number—you'll *know* you have no room left. If you need to carry over a program to another tape, this feature will tell you how much time the program will take up on the next tape. Also, because of differences in machines, you still may find a little tape left over.

So rest assured, you won't miss the exciting climax to that next late-night movie. Let's see, tomorrow at 3 a.m. they're showing "The Boogens II"...

ANTIC CHALLENGE

*Can you write a short, simple patch making it possible for TapeTime to print titles, speeds and times on the different-sized labels for VHS and Beta Cassettes? **Antic** would be interested in publishing the best add-on labeler we receive.*—ANTIC ED

Paul Shannon, a freelance artist from Martinsville, Indiana is making his first appearance in **Antic**.

Listing on page 72

MAGNIPRINT II+

By David Merrihue

No sooner had I brought my very first shiny new dot matrix printer home than did I run to my fellow computer lovers, bragging about the Works of Art that would soon sprout from its fertile form feed. My den would become a greenhouse of graphics, a nursery nurturing cross-pollinations of computer creativity.

The new Star NX1000's tractor would plow a fertile field indeed. My dear departed Atari 1027 would smile down from that Great Device Timeout In The Sky, knowing that a new and more agile generation was creating a better world. Favorite graphics, even those not designed for computer printing, would look better than ever in print after being fine-tuned with some suitable printing utility.

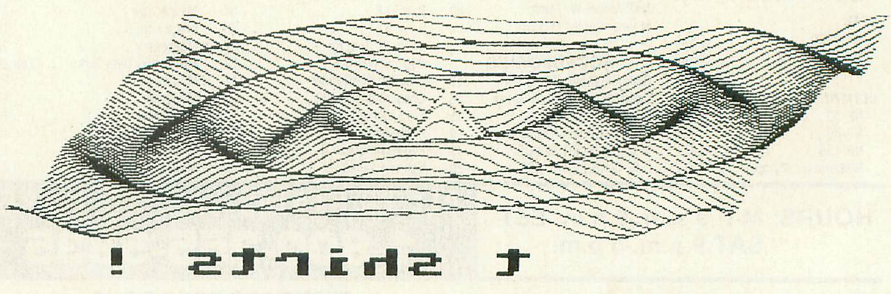
How about signs and greeting cards using pictures from my favorite movie or home video? Double-page B/Graph prints in four colors? Giant posters made from my children's paint program art! I would use game display screens or movie frames in my BASIC programs! Adult invitation cards sporting *Strip Poker* graphics! These projects and more would be possible, with a couple of good programs to facilitate them. . .

Well, yes, it's all possible, but not exactly easy. The world of microcomputer graphics and printing is a confusing morass of incompatible graphics formats, modes, programs, printer drivers, etc. There are numerous programs that convert, manipulate, and print graphic images, and some are quite good. But what we really need is a program that puts the most important utilities together into one versatile, easy-to-use package. After all, the less time I spend with my head buried in a stack of program documentation or staring at the word "LOADING. . .", the more comfortable and creative I'll be with my computer.

Alpha's **Magniprint II+, version 4.1** ($24.95), while not quite my Dream Program, is a very useful tool that will let you use grahics from just about any format, including the widely used Micro-Painter and Micro Illustrator, plus B/Graph, Computereyes, Print Shop, Strip Poker and BASIC screens! What's more, Magniprint II+ really makes your dot-matrix printer sing. It prints the 4 colors of Graphics 7.5 (ANTIC mode E) in adjustable gray scale, and it prints the 16 shades of GTIA Graphics 9. (*Earlier Magniprint versions have been reviewed in previous issues.* — ANTIC ED)

Magniprint II+ directly accesses picture files stored in compressed Micro Illustrator format, such as Koala Pad, Atari Touch Tablet, or Suncom Animation Station. All others will have to be converted. Once you have your source picture file on a data disk, the conversion process is easy.

You'll need 66 disk sectors for each picture. Magniprint II+ reads and converts the files on the spot, temporarily cutting down on disk swaps for 1-drive users—but leaving both the original and the converted files on the disk. Later, you'll want to delete the original to save on disk space.



Reversed image for T-shirt design

Magniprint II+ can save your graphics to disk in Micro-Painter 62-sector format, or it can save Graphics 7.5 images (also called Graphics 15 or ANTIC mode E) in compressed Micro Illustrator format. Most files can be converted to Graphics 7.5 inside Magniprint II+, printed as Graphics 7.5, 8, or 9, and saved as 7.5. They can then be used by programs that read those modes.

Some software such as Print Shop uses its own unique storage format. I've had good results using Picture Plus and Graphic Shop (both from the Antic ARCADE catalog) for post-Magniprint conversions.

After booting Magniprint II+ and loading a graphic, you can make a "quick print" to get an idea of what you have. Now let's edit! You have a choice of the original colors, or two alternate color schemes. There is a joystick-controlled "touch up" mode that will draw or erase dot by dot. This is the weakest part of the program—if you have other software for that function, try it first. The entire image can be easily scrolled and cropped, so your borders are where you want them.

Text can be added anywhere in the graphic, in four sizes, positioning it by joystick. Text and scrolled position can be saved to disk. To access these choices while in the view/edit mode, just press the [SPACEBAR]. Five character sets are on the disk. Since the standard 9-sector character set file format is used, many more character sets useable with Magniprint II+ can be had from users groups or online services practically free (as well as many pictures in Print Shop and other formats).

From the print menu, the four Graphics 7.5 gray-scale registers can be adjusted. This is as close as you'll come to WYSIWYG for 8-bit graphics, and I find it quite useful. At this point, press [START] to print or [ESC] to go back to the view/edit mode. Your picture will be intact, but all your cropping and shading work will be lost, and there's no practical way to record the changes on paper.

Select one of as many as 8 sizes, depending on graphics mode, or 3 poster sizes. Print in regular or inverse (like a photograph negative), upright or sideways, blocked left or centered, in regular or "enhanced" (darker) mode if your printer supports it. Print in four colors, changing to different colored ribbons.

A "mirror image" feature reverses the picture, so you can make custom T-shirts by printing with special transfer ribbons. Printer line spacing can be adjusted if needed, and expanded printing can be toggled. If your printer defaults to non-expanded print, you can get a new perspective from your 3-D or wire-frame pictures by toggling to the "off" setting.

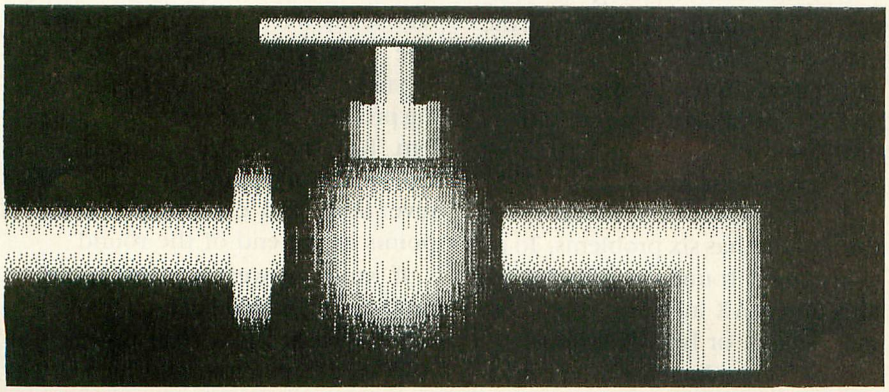
Okimate color printers won't work with Magniprint II+, and your interface must be compatible with the Atari 850. There are drivers for Epson, Gemini/Star, Panasonic, C. Itoh, and the Atari XMM801—or anything compatible with the above. The driver sets up in less than a minute and away you go.

The disk also contains BASIC subroutines that let you use Magniprint II+ format screens in your own programs and convert screens drawn in BASIC to Magniprint II+ format. Graphics modes 3 through 11, and text modes 0, 1, and 2 can be used. Included is Print All, a screen lister program that prints everything exactly as it appears on your screen. This is a handy way to print your BASIC program listings which use Atari graphics characters or inverse characters.

The 130XE RAMdisk can be used to store pictures while Magniprint II+ is running. Of course, when you exit the program, your RAMdisk data is lost. Single and enhanced density are supported, but not double density. DOS functions cannot be performed from the program, but [RESET] is not trapped, so I enter SuperDOS or Atari DOS that way. A drawback here is that Magniprint II+ will not load from DOS. The disk is copy protected.

The user interface is as friendly and easy as it needs to be. It's not cluttered with unnecessary choices or menus. The 50-page manual has the information you need. As is often the case, I found that using the program several times and referring to the manual when I got stuck gave me the best sense of what's going on. A reference card and tutorial section are included. All in all, Magniprint II+, v. 4.1 is a "must have" in my book. My printer is hooked, and now I have to get a second job just to keep it in ribbon—and my kids in posters of Bugs Bunny, my wife in moire patterns, the church in Halloween party signs, my den in wallpaper. . . ▲

$24.95, 48K disk. Alpha Systems, 1012 Skyland Drive, Macedonia, Ohio 44056. (216) 467-5665.

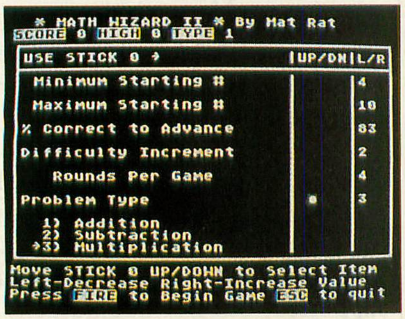


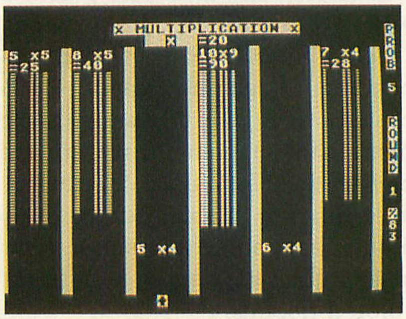
Graphics 9 image showing the 16-level grey scale

SUPER DISK BONUS

Talking Math Wizard

Software that speaks—no extra equipment needed! *By Matthew Ratcliff*





Math Wizard, my arcade-style arithmetic practice program for schoolchildren, was published in the April, 1984 issue of **Antic**. This month's Super Disk Bonus is the Covox-enhanced sequel—Talking Math Wizard.

When you zap a correct answer, Talking Math Wizard speaks the complete equation. For example, if a 27 is at the top of the screen and you zap "11+16," the program would say: "Eleven plus sixteen equals twenty-seven."

Helping me program this magic was the $39.95 Covox Voice Master Junior. However, you do not need a Covox or any other special equipment to play Talking Math Wizard—only the MATHWIZ.BAS, MATH.SYS and WIZTALK.SPK files from this month's Antic Disk. But if you do own a Covox Voice Master or Voice Master Junior, you can can get rid of my voice from the file and put in your own voice—or any other sound you choose.

When you RUN Talking Math Wizard from the Side B main menu of the Antic Disk, you'll see a game options menu. By fine-tuning these options, you can change the type and difficulty of the problems. Plug a joystick into port 1. Move the stick up and down to put the flashing cursor next to the item you want to change. Push the stick left or right to change the value of that option. Options include:

1. Minimum starting number (MIN): The smallest value used in the math problems.
2. Maximum starting number (MAX): The largest value used in the problems. This value must exceed MIN by at least five.
3. Percent Correct to Advance: Each round has six problems. To go to the next round, in which both MIN and MAX increase, your score must match or beat this value.
4. Difficulty Increment: The number by which MAX will increase after each round.
5. Rounds per game.
6. Problem type: Select addition, subtraction or multiplication.

The high score, most recent score and type of math problem for the high-score game are displayed near the top of the menu screen.

Press the joystick button to begin the game. The number of the current round, the problem number and your percentage of correct answers appear at the far right. The current problem type appears at the top of the screen. The answer box is below.

As the round begins, six problems scroll toward the bottom of the screen, where you are stationed with a number blaster (flashing cursor). An answer to one of the problems is selected at random, spoken and displayed at the top of the screen. Move the cursor under the problem whose answer corresponds to the one displayed above. Press the joystick button to select the matching problem. If more than one problem has the indicated solution, choose the one nearest the cursor to save time and earn more bonus points at the end of the round.

If your answer is correct, the problem is blasted back to the top of the screen. The correct answer is displayed beneath it, and then the

entire problem is spoken. Then the next answer is displayed and spoken, and the scrolling continues. If you blast an incorrect answer, it is ignored except for a lowering of your success percentage.

If a problem reaches the bottom of the screen before you can answer it, it will scroll back to the top of the screen. There, the correct answer will be displayed and the entire problem will be spoken.

If your percentage of correct answers is below the minimum, you must repeat the round. If your percentage is high enough, you will receive a bonus for speed and accuracy.

When all rounds are complete, the main menu comes up again and the high score is displayed. At this point you may press [ESCAPE] to exit to BASIC, or select new options and play another game.

For Covox owners who want to insert new speech data, here's how to do it. First load the Voice Master software, version VM800 for the Atari 800. The XL/XE versions will not work properly with Talking Math Wizard II.

Note the USR calls in lines 50, 110, 190 and 210. With VM800 loaded, simply enter what you see in the REM portion of each line. The VM800 "wedge" software automatically translates those commands into the proper USR calls for you. Note that you may get an error with the SSAVE command. My version of VM800 has trouble parsing it, but the syntax is easily corrected.

RUN WIZTALK.BAS from this month's Antic Disk. Put a joystick in port 1 and the Voice Master microphone into port 2. WIZTALK will prompt you for each word it needs to learn. Speak the word distinctly and quickly. After the program learns the word, it is played back for you immediately. If the word sounds all right to you, press the trigger to move on to the next word. Otherwise, pull back on the joystick to say that word again.

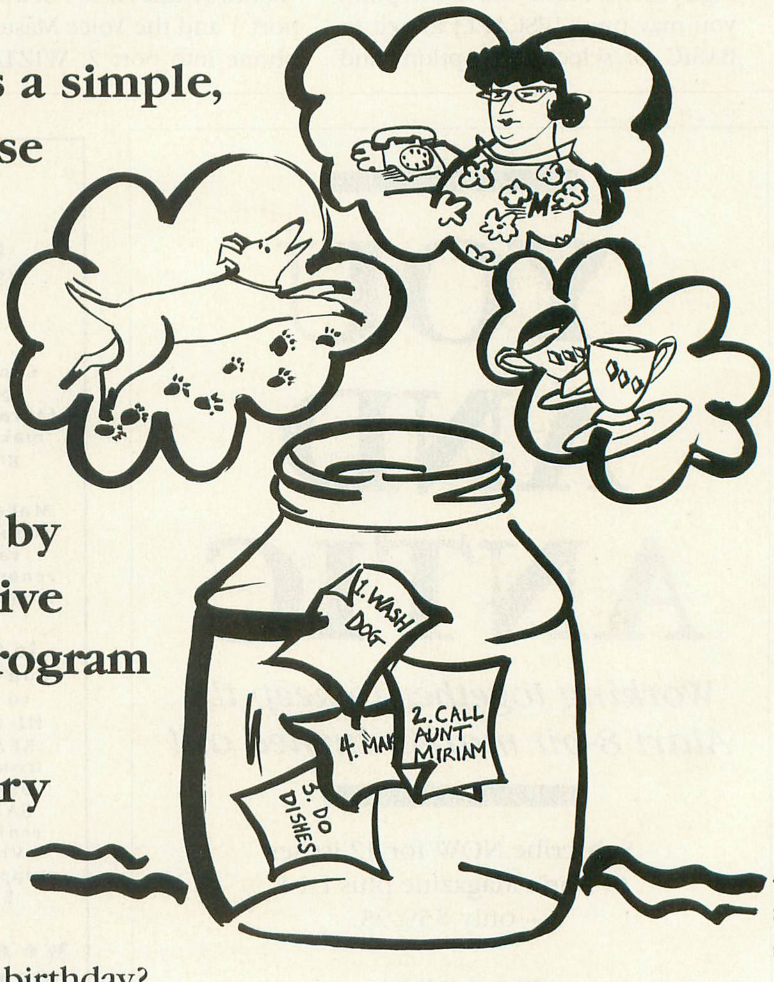
After each word is learned, total size of the current speech data is displayed. Keep a close eye on this: It must *not* exceed 12,000 bytes or it will be too large to fit in Talking Math Wizard. You may need to run WIZTALK a few times before you get a feel for how fast to talk.

Once you're done, copy MATHWIZ.BAS (the main program), MATH.SYS (which contains data for three assembly language routines) and WIZTALK.SPK to another disk and RUN "D:MATHWIZ.BAS". ▲

Job Jar Database

By Jeffrey Summers, M.D.

Job Jar Atari is a simple, useful database that keeps track of your family household chores, prioritizing the task lists by deadlines or by comparative importance. This BASIC program works on all 8-bit Atari computers of any memory size, with disk drive.



Kate Murphy

Fix the roof, or shop for Grandma's birthday?

So much to do and so little time to do it. Often it's difficult to get organized, so at my house we used a "job jar" containing little slips of paper on which are written jobs that need to be done. When you have some free time, you go to the jar and pick out a job at random. If you complete the job, you get to tear up the piece of paper and throw it out.

This works fine if all the jobs are of equal importance and none have special deadlines. But what if you have a job that must be completed by a certain date? What about the shed roof that's about to cave in if you don't repair it, yet you pull "write letter to Aunt Suzie" out of the jar? Aunt Suzie will be pleased to get the letter, but it might contain news about the shed roof collapsing and the cost of replacing the tools inside.

What if you only have an hour and want a short job? Of course you can fish around in the job jar to choose the higher priority job, the short job, or the job with the closest deadline. But that 8-bit computer sitting on your desk could make things a lot easier when you use it with Job Jar Atari. This program prioritizes your jobs and gives you lists of tasks in order of various criteria such as deadlines, comparative importance, or time allotted.

GETTING STARTED

Type in Listing 1, JOBJAR.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you own this month's Antic Disk, transfer Job Jar Atari to a fresh disk that you will use for your job jars.

The program first asks you the name of the person whose jar you want. Each family member can have a different jar. Type your name—as many as 8 letters, all CAPITALS. The program then checks to see if there is a job jar on the disk for the name entered. If Job Jar Atari doesn't find a jar matching the name, it creates one and informs you that this is for a new person. Then you are asked for today's date. Enter this in numeric format, MMDDYY. For example, January 3, 1989 would be entered as 010389.

Next comes the main menu. The selections here are A to Add a job, D to Delete a job, L to List all the jobs, and E to Exit. Press A to add the first job to a new jar.



Don't fish around in a jar for the right chores—let your 8-bit find them for you.

You are now asked for the job's "due date." Enter the date that you want the job to be completed, using the same MMDDYY format as above. Then you are asked for the job's starting priority—the priority this job has RIGHT NOW. Priorities can range from 0 to 9, with 9 being the highest priority. After this, you are asked for the job's ending priority—its priority at due date.

You now type the size (time requirement) of the job, using S for Small, M for Medium, or L for Large. Finally you are asked for a short description of the task—37 characters maximum. Job Jar Atari asks you to confirm your entry. If you type Y for Yes, the job is added to the jar. If you made an error, type N for No. In either case, you are returned to the main menu.

Make a few entries until you are comfortable with adding to the job jar, then type L to get a Listing of the jobs. You will be asked whether you want the jobs listed in order of entry date, due date, priority, or size. If you choose anything besides size, you will be asked if you want the listing restricted to one size of job.

Finally, you get to choose between having your list displayed onscreen or printed on paper. All printers are supported, if they can be accessed by OPEN and PRINT statements. The program then sorts the jobs according to the order you selected and prints a ranked list reflecting your choices.

When the program ranks by priority, it calculates a priority for the current date. The calculation is based on the starting and ending priorities, date of entry and due date. Priority rises in a straight line connecting the date of entry to the due date, and then levels off if you haven't completed the project by the due date. If a job isn't that high a priority now, but will be later—for example, Christmas shopping—you can structure the job priority to reflect this.

When you type D to Delete a job, you are asked for a "description" of the job you wish to delete. You don't need to type the whole job description, just enough for Job Jar Atari to determine a unique job. Suppose you have two jobs, CLEAN GARAGE and CLEAN BASEMENT. If you want to delete the latter, typing CLEAN B will do it. If the program can't find the job to delete, you will be so informed.

It is important that you use the E command to Exit from Job Jar Atari anytime you delete an entry. Pressing E at the main menu causes the revised file to be saved to the disk if changes have been made.

Jeffrey Summers is a Rochester, NY physician whose useful application programs often appear in **Antic**.

Listing on page 67

Macro RESET

Customized command triggering

BY BRAD TIMMINS

Macro RESET is a handy, powerful routine enabling programmers to use the [RESET] key to trigger any command series controlling the BASIC Editor. The BASIC program creates a machine language routine that works on all 8-bit Atari computers of any memory size, with disk drive.

Just about anybody who ever wrote a BASIC program has sometimes wanted to customize the BASIC Editor for various special uses. You might want to change the screen colors, for instance, or change the left and right screen margins. Such changes are quite easy to make—requiring only a few simple POKES. But then if the [RESET] key is pressed, virtually every change made to the Editor will return to its default value.

There have been many machine language routines written that "protect" selected memory locations from being set back to their default values when the [RESET] key is pressed. This makes it easier for you to customize a few aspects of the Editor. But what if you want something more complicated? Maybe you'd like your program to automatically LIST every time you press [RESET]. Or maybe you want [RESET] to automatically SAVE an updated copy of your program?

Macro RESET lets you create your BASIC subroutines which will be RUN every time you press the [RESET] key. In other words, you can now easily program [RESET] to perform any series of BASIC commands you wish.

GETTING STARTED

Type in Listing 1, RESET.BAS, check it with TYPO II and SAVE a copy before you RUN it. When RUN, RESET.BAS creates a machine language program called RESET.EXE. Antic Disk Subscribers will find RESET.EXE on the monthly disk, along with RESET.M65, the MAC/65 assembly language source code. You do not need RESET.M65 to use Macro RESET.

Don't try to run Macro RESET from the Antic Monthly Disk. Copy RESET.EXE to another disk that has the DOS.SYS file on it. Then rename RESET.EXE to AUTORUN.SYS.

Turn your Atari off and place your Macro Reset disk into drive 1. Now, turn on your Atari and Macro RESET will automatically load and start. You'll first see a message telling you that Macro RESET is turned off. Hold down the [OPTION] key and press the [RESET] key to turn to it on. Holding down the [OPTION] key and pressing the [RESET] key acts as a toggle switch, turning Macro RESET on and

off.

Let's try a short example. Turn on Macro RESET and type:

31000 PRINT "HI, MOM!"

Now press the [RESET] key and watch Macro RESET go to work. Whenever you press the [RESET] key, Macro RESET enters two BASIC commands:

POKE 842,12:GOTO 31000

When BASIC receives these commands, it executes them the same way it would have if you had typed the line and pressed the [RETURN] key.

The first command—POKE 842,12—turns off the Forced Read mode. The second command sends your Atari to your own subroutine. Make sure your subroutine starts at line 31000 and it will automatically execute every time you press [RESET]. Macro RESET uses Page Six, but leaves the first 84 bytes free for your use.

FORCED READ

After Macro RESET prints its two BASIC commands on the screen, it uses your Atari's "[RETURN] key mode" or "Forced Read mode" to enter those commands into BASIC.

If you imagine an invisible finger rapidly pressing the [RETURN] key over and over again, you've got a good idea of what this mode is all about. Next time you use TYPO II, keep an eye on the cursor. After TYPO II calculates a two-letter code for the line you typed, it uses the Forced Read mode to add that line to your program.

Forced Read mode comes in handy when you want a BASIC program to modify itself. The program will PRINT the program line in the middle of the screen, put the cursor at the top of the screen, then use the Forced Read to enter that line into the program. This technique forces the Editor to execute BASIC commands generated by another program. ▲

Brad Timmins of Sandy, Utah has been programming on the Atari for five years. He is making his **Antic** *debut in this issue.*

Listing on page 64

Bismarck, Judge, Jumpstart, SPI

BISMARCK

Bismarck: The North Sea Chase is Datasoft's entry into the realm of war simulations, a battlefield dominated by SSI. And while SSI's game design is not bettered on every front, Bismarck does have a couple of advantages.

This program recreates the historic 1941 sea battle between the British ship *Hood* and Germany's *Bismarck*. History tells us that the *Bismarck* sank the *Hood* with all hands. This game lets you change history as well as experience the battle from either side. And if you get tired of sea battles, launch a Swordfish torpedo plane from a carrier and try your luck at an airstrike.

Newcomers will appreciate the arcade-like simplicity of play. The graphics-oriented control interface lets you initiate commands as easily as on the Macintosh or ST—just point and select with the joystick. Though this isn't as fast as a mouse, it's still quick and easy to learn and use.

The manual, critical in a simulation, is rather slight. While it does index and cover every aspect of the game, the exact operation of some commands are not spelled out precisely and completely. This could discourage those beginners to whom the game caters. The graphics are standard fare, and while the screen updates quickly, the program execution is chained to the chugging disk drive, which must be accessed to load new code whenever you enter a different command mode.

Overall though, Bismarck is worthy of consideration. It's a good introduction to simulations, teaching the basic concepts of a complex game genre in an arcade framework.—STEVE PANAK

$29.95, 64K disk. Datasoft, 19808 Nordhoff Place, Chatsworth, CA 91311. (818) 886-5922

THE JUDGE

Can your computer make your decisions for you? The somewhat scary answer is, yes. And it can do a better job than you can.

As far as I know, **The Judge** is the only decision-making commercial software available for the 8-bit Atari, although there are many similar programs on other computers. The Judge is amazingly flexible and can handle extremely complex problems. It can also be used for scoring contests. Its power really begins to show when you have several contestants being judged on several factors, by several judges.

Like most computer applications, The Judge is more work than it's worth for simple problems. But for difficult dilemmas, or repetitive problems, it's worth its weight in silicon chips.

First, you must define the question for The Judge. You lay out all the options, all the factors to take into account, and the relative importance of the factors. Then you evaluate each of the factors for each of the options. The Judge evaluates your input and rates the options and gives you the scores. It sounds simple, but it's actually pretty subtle. The results will surprise you. The Judge will often rate things differently than your intuitive feelings did.

The Judge is not easy to use. It has an interface only a programmer could love, full of cryptic abbreviations. But once you learn it, you can move around pretty fast in the program. Also, since it's written in BASIC, you can go in and redesign it to your own preferences.

Should you follow The Judge's advice? Well, my daddy always said when you need to decide, promise to abide by the results of a coin toss. When the coin hits the ground, you'll know what you really want to do. Do that.—CHARLES CHERRY

$39.95, 48K disk. Mead Micro Ware, 10 Bonito Place, Los Alamos, NM 87544. (505) 662-9475.

JUMPSTART MODULE, ENHANCEMENT DISK

When you "warmstart" your Atari by pressing the [RESET] key, the computer goes through a number of processes. When you "coldstart" your Atari by turning the computer off and back on again, it does all the warmstart processes plus a few more—including erasing the main memory and rebooting the disk drive. (During a warmstart, the program in memory can reboot the drive.) A coldstart switch like the **Jumpstart Module** ($18.95) lets your Atari XL/XE perform all its coldstart routines *without* being turned off.

Even though your Atari has a perfectly good on/off switch, there are several reasons to install a coldstart switch. You'll reduce electrical stress on the computer by eliminating some power cycling (turning the computer off and back on). You'll extend the life of the on/off switch. The switch is in

a more convenient location. And on expanded memory XLs, you eliminate the 15 second wait while the memory drains out.

But all these reasons are minor. The real reason for a coldstart switch is to preserve the contents of your RAMdisk during reboots. The operating system erases only the main memory during a coldstart—not the extended memory. That gets erased only when the power is turned off. If you coldstart without turning off the power, the extended memory is protected.

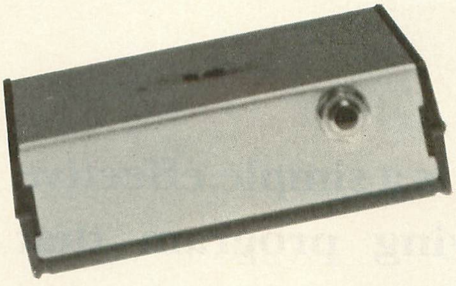
For example, as a coldstart switch user you could draw a picture with a paint program, save it instantly to the RAMdisk, reboot with your graphics printing program, load your picture instantly from the RAMdisk and print it. Very convenient.

The Jumpstart Module is a cartridge with a small push button on the top. Although it plugs into the cartridge slot, it uses no memory. The module works as advertised. You simply hold down that button and press [RESET]. It's more convenient on the 800XL than the XE because of the location of the cartridge slots. Unfortunately, you can't use the Jumpstart Module with other cartridges.

The Jumpstart Module works by telling the OS that a cartridge has been inserted. That forces a coldstart, but it can also confuse the computer about the cartridge status. Sometimes this causes a problem and you must press [RESET] again. To prevent confusion, I find that an always reliable method is to press [RESET] a second time (without the Jumpstart switch) as soon as the disk starts to spin.

The Jumpstart Module is not exactly the same as a hardware generated coldstart. The Jumpstart Module uses the OS to reset the computer. In a very severe program crash, the OS might not be able to regain control. A true hardware reset, like turning the computer off, then on again, will always reset the computer.

The **Enhancement Disk** ($7.95), another Logic One product, supplies useful patches to DOS 2.5 and SpartaDOS so they won't reinitialize (and erase) the RAMdisk while booting. The patches don't change the LOMEM pointer and should not cause compatibility problems with other programs. Another program on the disk displays the contents of individual sectors of DOS 2.5 or SpartaDOS RAMdisks.



If you use a RAMdisk, you need a coldstart switch. If you have expanded your memory, you really need one. The Jumpstart Module is a practical, inexpensive solution.—CHARLES CHERRY

$24.95 for Jumpstart Module plus Enhancement Disk, XL/XE. Logic One, P.O. Box 18123, Cleveland, OH 44118.

SPI GAMING LANGUAGE

Designing a programming language is the toughest thing you can do on a computer. It is maddeningly difficult to balance features with performance. No matter what you do, some will hate it, others will be indifferent, and only a few will be enthusiastic. But every language enriches the programming environment and all programmers are forever looking for a language which will fit them better. I think Steven Bennett's **SPI** may be a little lean on features, but I'm sure it is just what some programmers are looking for.

SPI is designed for three things—speed, speed, and more speed. To achieve speed, it is stripped to the bare bones. It supports only integer numbers. Graphics 0 and 12 (ANTIC 4) are the only modes supported, but you can mix them in the display list. Screen writing is done directly to screen memory. Most special operations like reading joysticks or moving players are done by directly manipulating memory.

Whoa! Did I say Graphics 0 and 12? Those are both text modes. How can you write a game with them? Actually, almost all games, from Pac Man to Pharoh's Curse, are done in text modes with redesigned character sets. Text modes are the fastest and use the least memory. I only wish more text modes were supported.

Program control includes equivalents to GOTO and GOSUB as well as IF..THEN..ENDIF and WHILE. . . .ENDWHILE. The IF statement supports only one conditional, but you can have multiple lines of instructions between THEN and ENDIF. SPI uses ;IF for ENDIF.

I/O supports input from the keyboard as well as block reads and writes to a disk file. There is no READ. . .DATA structure. Strings and Arrays are supported as simple blocks of memory. You must calculate the offsets. Arithmetic is limited to the four basic functions (+-*/) and there are no Boolean operators.

My biggest disappointment with SPI is that variable names are limited to single letters (and therefore 26 variables) and line labels are limited to numbers between 1 and 32. That, combined with all the memory addresses, produces code which is very hard to understand. It is definitely not self-documenting.

The two most unusual things about SPI are that it requires Atari BASIC and comes on a DOS 3 disk. I assume that SPI is stealing some of the high-speed code in Atari BASIC, but I can't think of a single reason for DOS 3.—CHARLES CHERRY

$29.95, 48K disk. SPI, 9512 Wessex Place, Louisville, KY 40222.

Joystick Oki Draw

FROM SCREEN TO OKIMATE 10, IN NINE COLORS,

By Denis Schaffer

Joystick Oki Draw is a simple, effective nine-color drawing program that makes printouts on the inexpensive Okimate 10 color printer. This BASIC program works on all 8-bit Atari computers of any memory size. Saving your pictures requires a disk drive.

Use Joystick Oki Draw to paint color pictures on your 8-bit Atari computer screen. And then effortlessly print them out on Okidata's affordable Okimate 10 color printer. You can choose from nine colors—red, orange, yellow, green, blue, purple, white, black and grey.

You also have the choice of two drawing modes. Mode 1 gives you the eqivalent of a Graphics 5 screen—80 columns X 48 rows. Mode 1 is especially good for small children because it is easier to use, and the screen dumps are a full page wide.

Mode 2 gives you the total Graphics 10 screen—80 columns X 192 rows. Mode 2 is better for creating fairly detailed drawings and is also more useful if you want to make a number of identical pictures for invitations or announcments, etc. That's because each mode 2 picture occupies slightly less than half the page width. So with a slight program modification, you can print two identical pictures side-by-side, without using any additional time or color ribbon.

To print mode 2 pictures side-by-side, in program line 40 change SIDE=0 to SIDE=1.

GETTING STARTED

Type in Listing 1, COLOR.BAS, check it with TYPO II and SAVE a copy before you RUN it. When Joystick Oki Draw starts, you'll see a brief set of instructions and then you will be prompted to choose mode 1 or mode 2.

After you type a number, you will be prompted to type the filename for saving and/or loading a picture. If you just press the [RETURN] key, the default name is DRAWFILE. After you type a filename, the screen will appear with the paint cursor flashing in the center. In the upper right corner, the white dot represents the size of the cursor.

Move the joystick in any direction to move the paint cursor. If you want to erase something, simply hold down the joystick button while moving the cursor over whatever you want to erase. To change to another color, press the [SPACEBAR] until the cursor is the color you want.

To clear the entire screen and start over again, press the [TAB] key twice. To move the cursor to a new postion without erasing or drawing over anything on the screen, press the [INVERSE VIDEO] key at the lower right corner of the keyboard. The cursor will stop flashing and can now be moved without affecting the current screen. After you reposition the cursor, press the [INVERSE VIDEO] key again and resume drawing.

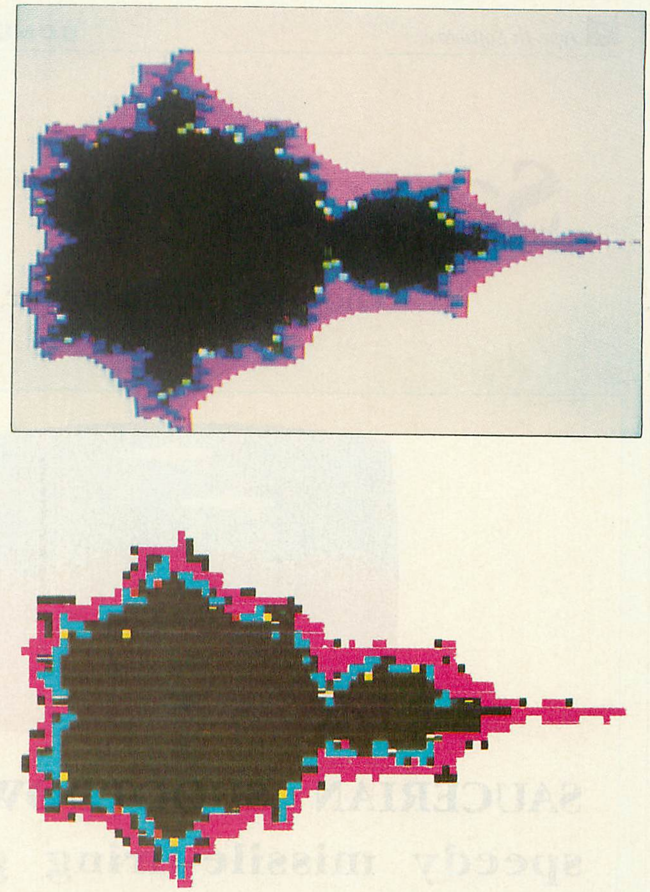
SPECIAL FEATURES

If you want to slow down the cursor, press [<]. Pressing [SHIFT] [<] makes the cursor move at its slowest speed. If you want a faster cursor, press [>]. To make the cursor move at its fastest speed, press [SHIFT] [>>].

If you are in mode 2, you can change the size of the cursor. Pressing [+] increases the size of the cursor. Pressing [SHIFT] [+] increases the size of the cursor to its maximum.



Joystick Oki Draw lets you create color pictures and print them on your Okimate 10 color printer.



An image created with Joystick Oki Draw (above) and a printout (below).

Pressing [-] decreases the cursor size and pressing [SHIFT [-] decreases the cursor to its smallest size.

To save a file to disk, press [S]. This will save the file under the name given when the program was first started. To load a file from disk, press [L]. This overwrites whatever is currently onscreen.

Finally, press [P] to print a hardcopy of the onscreen picture. The Okimate 10 color printer is the *only* printer that works with Joystick Oki Draw. Make sure that the Oki 10 is turned on and that there is a color ribbon in it.

PROGRAM TAKE-APART

Lines 50 to 290 contain the instructions to make the cursor move and draw. Line 280 checks to see if any keys have been pressed.

Lines 300 to 370 set up the variables and screen.

Lines 380 to 470 are the Oki 10 screen dump for mode 1.

Lines 480 to 620 are the screen dump for mode 2.

Lines 630 to 790 check which key has been pressed and perform the appropriate instruction. If the instruction is to save or load from a disk or to perform a screen dump, the screen is turned off by POKEing a 0 into address 559. This causes the computer to work slightly faster. After the operation is finished, the screen is turned back on by POKEing the appropriate number into address 559.

Line 800 decreases the width of the cursor.

Line 820 increases the width of the cursor.

Line 840 changes the color of the cursor.

Lines 890 to 910 are used to clear the screen. Line 900 checks to see if the [TAB] key has been pressed a second time. Otherwise the command is ignored.

Lines 920 to 1060 print the instructions and get the mode number.

Lines 1070 to 1110 get the name of the file that is to be used by the program.

Lines 1120 to 1160 save a picture to disk.

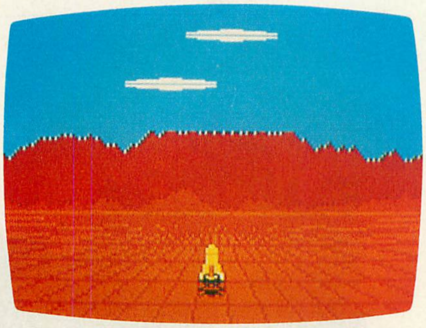
Lines 1170 to 1230 load a picture from disk. ▲

Denis Schaffer is a Civil Engineer who wrote this program while at MIT obtaining his M.S. graduate degree.

Listing on page 69

Saucerian Shootdown

They don't seem hostile, but . . . *By James Catalano*



SAUCERIAN SHOOTDOWN IS A speedy missile-firing game as straightforward as its title. This BASIC program works on 8-bit Atari computers with at least 32K memory, disk or cassette.

During your duty shift at the security console monitoring the outer sectors surrounding the military outpost on planet Traken, your scanners report several unidentified objects moving erratically in and out of Quadrant 24. Checking your databases, you find that no maneuvers are planned for that quadrant today. You quickly dispatch an Occuloid Trackship to investigate.

Arriving at the scene, the Occuloid's camera reveals strange saucer-like objects darting about. You switch onto a general broadcast hailing frequency and try to communicate with the saucers. There is no response.

Although the saucers don't appear to be hostile, they might well be remote-controlled spy devices from some other planet. You can't take chances with the security of this remote military base. If these saucers won't answer your communications, you will send an Automated Missile Launcher to shoot them down.

Type in Listing 1, SAUCER.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you have trouble typing the special characters in lines 20060-20075, don't type them in. Instead, type in Listing 2, check it with TYPO II and SAVE a copy. When you RUN Listing 2, it creates these hard-to-type lines and stores them in a file called LINES.LST.

To merge the two programs, disk users LOAD "D:.BAS" and then ENTER "D:LINES.LST." Cassette users: CLOAD Listing 1, then insert the separate cassette used for Listing 2 and ENTER "C:". Remember to SAVE the completed program before you RUN it.

Move the joystick to shift the Automated Missile Launcher left or right across the bottom of the screen. Press the joystick button to launch a missile. You score 100 points for every hit, plus a bonus of 1000 points for every 5 saucers destroyed.

You can only hit a saucer when it is directly above your Launcher. When a saucer is targeted accurately, its color will turn white. The Launcher is armed with 50 missiles. The game ends when all missiles have been fired.

James Catalano of Chicago is the programmer of Sorcerer's Apprentice, *which was* ***Antic's*** *September 1988 Game of the Month.*

Listing on page 70

Mighty Lister

Mighty Mailer becomes an inventory database,

BY PHILIP BATE, Ph.D.

Mighty Lister is a short patch that converts Antic's popular 1987* Mighty Mailer *software into a fast, powerful inventory database. This BASIC program works on all 8-bit Atari computers of any memory size, with disk drive.

Need a program for a specialized job? Your **Antic** Magazine files probably have programs that are at least close to what you want. Or maybe there are a few good machine language subroutines in these files that you could incorporate into a simple BASIC program that you write to do the job.

I needed a program to keep track of an inventory of spare parts along with where they were stored, plus a video tape inventory to find recordings quickly. I looked at several databases ranging from the very versatile but somewhat complex Antic Data-X (Super Disk Bonus, May 1988), right down to the simplest filing programs. They were either too complicated and time-consuming, or too simple with slow recall.

But as the author of *Mighty Mailer* (**Antic**, September 1987), I thought I might be able to re-write it for what I wanted. *Mighty Mailer* has a fast random access subroutine in machine language and a simple I/O subroutine. Both of these would be necessary for what I wanted.

The first step was to LIST the program file to a word processor and make a printout. I then went over it to see what needed changing for conversion into an inventory control database. I was surprised to find that I could even use *Mighty Mailer* without changing it at all, because it already operates as a database. But, since I had several new jobs for the program, I decided to modify it into a separate listing.

Mighty Mailer has now become a very fast inventory program, with the same lightning recovery speed as the original mailing-list printer. Mighty Lister can be used to inventory almost anything—from the contents of record albums or video tapes to spare parts in a specific part of a warehouse.

I use Mighty Lister to inventory all the spare parts carried aboard a world cruising yacht, cross-referencing each spare part with its exact location on the yacht. Using Mighty Lister, I can scroll by item, by part number or by partial description. I can also list out all the spares stored in the forward starboard hatch, etc.

Mighty Lister is not just an inventory program. It's a fast and simple database for use in standard record-keeping tasks. How often do you need a very complex database, instead of one that just makes it easy to keep track of office furniture or warehouse inventory, or even home uses like music cassettes or video tapes?

GETTING STARTED

Owners of this month's Antic Disk will find the complete Mighty Lister available as LISTER.BAS.

If you already have *Mighty Mailer*, but do not own this month's Antic Disk, you can just type a short patch and merge it into your original listing. Do this by typing Listing 1, LISTRMOD.LST, check it with TYPO II and LIST it to disk under the filename "D:LISTRMOD.LST". LOAD your original *Mighty Mailer* program and ENTER "D:LISTRMOD.LST". Be sure to SAVE the merged file back to disk as "D:LISTER.BAS."

We also published Mighty Lister as a standalone type-in listing in this issue. Type Listing 2, LISTER.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you have trouble typing the special characters in lines 70-84, don't type them in. Instead, type in Listing 3, check it with TYPO II and SAVE a copy. When you RUN Listing 2, it creates these hard-to-type lines and stores them in a file called LINES.LST.

To merge the two programs, LOAD "D:LISTER.BAS" and then ENTER "D:LINES.LST." Remember to SAVE the completed program before you RUN it.

The modification process was not too difficult. Many of the changes are simply cosmetic. Title changes for items such as names/addresses are self explanatory when compared to the original listing. I didn't bother to change the REMs, which purists will probably want to do.

However, there are a few modifications that need explanation. I like a title page, so I added lines 33 and 36. Since this is now an inventory program, a routine is needed to print listings from any specific locator. For example, suppose I want to find out the contents of Bin 4 in the warehouse. I want to enter that storage identifier and print all items found in that location. This was simple because the subroutines were pretty much in place already. I just had to add lines 282, 284 and 286.

MAJOR CHANGES

One other significant modification was required. The Search Subroutine at lines 1150-1200 was designed for names and addresses on a mailing list, so it "jumps" backwards 30 spaces after finding the locator match, and then looks forward from that point to find the "next" double carriage return at the beginning of the desired entry. The following double carriage return is the end of the desired entry. This cute backjumping trick lets you find a complete name/address entry in any portion of the entry.

But, for an inventory list with short entries, this means that the wrong entry could be printed. So, I changed line 1160 so that the "jump" backwards is only 10 characters. If your entries are very short, you might wish to shorten that jump even further by changing the number after the "-" sign in that line.

Mighty Lister is just as simple to use as Mighty Mailer

Mighty Lister is just as simple to use as *Mighty Mailer* was. Any entry is limited to 255 characters—letters, numbers, or symbols. Press the [RETURN] key twice to separate entries. Otherwise, if you just follow the menu choices you should be able to operate Mighty Lister without problems. If you need more detailed instructions, see the original *Mighty Mailer* article on pages 30-32 of the September 1987 **Antic**.

The important principle here is that two seemingly different applications were really very similar. Look at program listings to try figuring what they really do logically. This could give you ideas of how to use them in completely different applications. *Mighty Mailer* is only superficially a mailing program, it is actually a mini database program structured for mailings. When you examine the logical structure of "old" programs this way, you might find many exciting "new" uses for them. ▲

Philip Bate is an orthomolecular psychologist at Cape Kennedy, Florida.

Listing on page 65

SHOPPERS GUIDE

ANTIC'S SEVENTH ANNUAL



Yes, there *are* still 8-bit products out there—more than 275 on our chart!

BY GREGG PEARLMAN, ANTIC ASSISTANT EDITOR

Antic's Seventh Annual Shoppers Guide to products for the 8-bit Atari computers is a little bit different from the guides we've done previously. This year we put together a chart that attempts to briefly describe *every* 8-bit software and hardware product available in the market during the 1988 holiday season.

We can't guarantee that the chart is 100% complete. But that's what **Antic** was striving for and we think we came pretty close—maybe as much as 95% of the original standalone products. (We did not attempt to list *every* add-on or variation for the main products.) If any significant omissions are discovered, **Antic** will publish a mid-year update chart this spring.

According to the 1988 **Antic** Reader Survey, finding good software is the biggest concern of most 8-bit users. We didn't think anybody really knows how much 8-bit software is still available out there. Certainly the editors of this magazine didn't know. So for the new Shoppers Guide, we decided to try finding out. . .

A happy coincidence helped **Antic** with the formidable task of surveying all independent products for the 8-bit Atari. Charles Cherry had just rejoined Antic Software to expand the 8-bit catalog product line. His first task was to contact all past 8-bit publishers to discover what discontinued high-quality commercial software might be available for reissue. Cherry's in-depth field research saved **Antic** editors weeks of work in finding information for the chart.

You can read more about the revived 8-bit Antic Arcade catalog elsewhere in this issue. And when you see products on the chart marked with an asterisk *— it means they are *already* available from the catalog!

USING THE CHART

The Shoppers Guide Chart is arranged in major product categories, similar to our past guides. Within each category, products are listed alphabetically by title. Complete addresses and phone numbers for the makers of each product are listed alphabetically in a separate directory following the main chart.

Unless otherwise stated, the charted products should run on all Atari 8-bit computers with at least 48K memory. Other usual requirements are a joystick and color TV (or composite color video monitor, or monochrome monitor).

Although it was sad to find that some of the best 8-bit products from the past are currently out-of-print, we came across many pleasant surprises while preparing the **Antic** chart. For example, some 20 SSI role-playing strategy games are still distributed by Electronic Arts.

With more than 275 listed products available *right now,* all 8-bit users should be able to find something that satisfies their needs. And with the Antic Arcade 8-bit catalog back in high gear, look for much more on the way.

HARDWARE ENHANCEMENTS

FA-ST Hard Disk	$699	ICD	Powerful and dependable 20Mb data storage. It really is fast, too
Fastchip	$19.95	NEWELL	Speed up floating point routines 300%
Function Key Kit	$14.95	INNOVATIVE CONCEPTS	Gives XL/XE models the F1-F4 keys found on the 1200XL
ICX-85 Keypad	$44.95	INNOVATIVE CONCEPTS	Enhanced 10-key number pad
MFM Hard Drive Kit	$289.95	ICD	MFM controller for 5 1/4 inch, 8-bit hard disk
MPP-1150 Interface	$59.95	SUPRA	Dependable connection between your 8-bit and standard printers or modems
Microprint printer interface	$49.95	SUPRA	Hook up your Atari to standard printers
Modem Mouth	$19.95	INNOVATIVE CONCEPTS	Add an external speaker to your modem
Multi I/O (256K)	$239.95	ICD	Turn your XL/XE into a multi-function workstation rivaling the ST in power
Multi I/O (1Mb)	$469.95	ICD	Four times the memory as the regular model above
Omniview XL/XE	$39.95	NEWELL	Gives you 80 readable columns onscreen
Omniview 256	$39.95	NEWELL	80 Columns for 256KXL upgrade
OSNXL OS chip	$49.95	NEWELL	Versatile operating system chip
PowerManager *	$24.95	TERRIFIC	Control your household appliances automatically using widely available X-10 modules
P:R: Connection	$89.95	ICD	Popular replacement for the Atari 850 interface
Printer Connection	$59.95	ICD	P:R: Connection's little brother
RAMbo XL	$39.95	ICD	Turn your XL into a 256K monster
RAMrod	$79.95	NEWELL	Operating system board that accepts EPROMs or standard OS ROMs
RAMrod XL	$79.95	NEWELL	Allows three different operating systems
RLL Hard Drive Kit	$339.95	ICD	RLL controller for 5 1/4-inch, 8-bit hard disk
SIO Port Box	$24.95	INNOVATIVE CONCEPTS	Eliminate the "dead-end peripheral" problem
SIO Switch Box	$34.95	INNOVATIVE CONCEPTS	Hook up two computers to one drive setup—or vice versa
1050 Controller	$21.95	INNOVATIVE CONCEPTS	Gives your 1050 write-on/off and normal modes

20 Meg Hard Drive	$699	SUPRA	Proven dependable performer for the 8-bit
256KXLLM	$39.95	NEWELL	256K RAM upgrade
Ultra-Speed Plus Chip	$69.95	CSS	Three operating systems in one
US Doubler with SpartaDOS	$69.95	ICD	High-speed disk I/O, true double density
XEP-80 *	$79.95	ATARI	The box that brings 80 columns of crisp text and graphics to your screen

SPEECH/SOUND

Parrot II	$59.95	ALPHA	Hardware/software sound digitizer
Pre-Recorded Parrot Sounds	$4.95	ALPHA	Digitized sound files for Parrot II
Voice Master Jr.	$49.95	COVOX	Powerful sound digitizer includes Escape from Planet X game

GRAPHICS

Animation Station	$89.99	SUNCOM	KoalaPad-like graphics tablet with software
Blazing Paddles	$34.95	BAUDVILLE	Powerful drawing/painting software
ComputerEyes	$129.95	DIGITAL VISION	Hardware/software video image digitizer
Desktop Performance Studio	$49.95	VIRTUSONICS	Unique concept blends music, animation and art
Graphics Transformer	$22.95	ALPHA	Combine and merge pictures from different paint programs
Video Title Shop	$29.95	DATAMOST	Creates animated titles for video tapes. Optional $19.95 Graphics Companion

EDUCATION

ACLS Protocols	$29	MAD SCIENTIST	Medical simulation software
Addition and Subtraction	$29.95	MINDSCAPE	Help with math
Astro-Grover	$9.99	HI-TECH	Colorful preschool software in Sesame Street series
Big Bird's Special Delivery	$9.99	HI-TECH	Preschool Sesame Street software
Biology	$19.95	AEC	Biology tutor
Blood Gases	$24	MAD SCIENTIST	Medical simulation software in Cardiac Arrest! series
CAMP	$19.95	XLENT	Computer Assisted Math Program help
Cardiac Arrest!	$69.95	MAD SCIENTIST	Find out how well you can run a simulated emergency room
Cardioquiz	$19	MAD SCIENTIST	Medical quiz in Cardiac Arrest! series
Decimals: Addition and Subtraction	$29.95	MINDSCAPE	Math drill help. Multiplication and Division disk is also $29.95
EKG Teaching	$29	MAD SCIENTIST	Medical simulation software in Cardiac Arrest! series
Ernie's Big Splash	$9.99	HI-TECH	Preschool software in Sesame Street series
Ernie's Magic Shapes	$9.99	HI-TECH	Preschool software in Sesame Street series
Foreign Language Curriculum	$59.95	AEC	Foreign language skills tutor
Fractions: Addition and Subtraction	$29.95	MINDSCAPE	Multiplication and Division disk is also $29.95

French	$19.95	AEC	French language skills tutor
Geography Facts Curriculum	$49.95	AEC	Geography tutor
Grammar	$19.95	AEC	Brush up on grammar skills
Grover's Animal Adventures	$9.99	HI-TECH	Sesame Street preschool software
History Facts Curriculum	$49.95	AEC	On-disk history teacher
Learn to Read Curriculum	$39.95	AEC	Reading program
Linkword Languages	$24.95	ARTWORX	Vocabulary memorization series available in German, Italian, Spanish
Mastertype Filer	$29.95	MINDSCAPE	Typing tutor
Math Blaster	$49.95	DAVIDSON	Math tutor with arcade atmosphere
MonkeyMath	$19.95	ARTWORX	Help with math
MonkeyNews	$19.95	ARTWORX	Early educational software
Multiplication and Division	$29.95	MINDSCAPE	Help with math
New Improved Mastertype	$39.95	MINDSCAPE	Arcade-like typing tutor
Pals Around Town	$9.99	HI-TECH	Early educational software
Pic Builder	$29.95	WEEKLY READER	Learn to draw onscreen
Quizmaster Construction Set	$11.50	EZUSE	Create any kind of multiple choice quiz
Reading Fundamentals Curriculum	$99.95	AEC	On-disk reading program
Science 3/4, 5/6, 7/8	$19.95 each	AEC	Science tutors for various grades
Science Facts Curriculum	$89.95	AEC	Science help for students and teachers
Sesame Street Print Kit	$14.99	HI-TECH	Flashy page design software disguised as a kid's program
Spanish	$19.95	AEC	Spanish language skills tutor
Spell It	$49.95	DAVIDSON	Spelling tutor
Spelling Curriculum	$39.95	AEC	Spelling program for students and teachers
Spelling Curriculum	$49.95	AEC	Spelling program for students and teachers
Stickybear ABC	$19.95	WEEKLY READER	Beautiful animated pictures teach the alphabet to kids Ages 3-6
Stickybear Basket-Bounce	$19.95	WEEKLY READER	Rack up points by catching falling objects. Fun for all family
Stickybear Bop	$19.95	WEEKLY READER	Family fun. Rack up points by bopping things
Stickybear Numbers	$19.95	WEEKLY READER	Animated counting game for ages 3-6
Stickybear Opposites	$19.95	WEEKLY READER	Big colorful animations introduce reasoning skills, ages 3-6
Stickybear Shapes	$19.95	WEEKLY READER	Learn circles, rectangles, etc. and win an animation. Ages 3-6
Typing Tutor/Word Invaders	$24.95 disk	ACADEMY	Arcade-like typing teacher
U.S. Geography	$19.95	AEC	Build up your knowledge of geography
U.S. Government	$19.95	AEC	Know how your country works
U.S. History	$19.95	AEC	Know what happened, and when
USA Construction Set	$11.50	EZUSE	Clever, thorough geography questioner
Vocabulary	$19.95	AEC	Everything you want to know about each state, in quiz form
Word Attack	$49.95	DAVIDSON	Vocabulary builder

Word Skills Curriculum	$49.95	AEC	Vocabulary builder
World Geography	$19.95	AEC	Geography drill program
World History	$19.95	AEC	History drill program

COMMUNICATIONS

BBS Express!	$39.95	ORION	Popular 8-bit bulletin board program
BBS Express! Professional	$49.95	ORION	Excellent upgrade, needs a hard disk and SpartaDOS
Express!	$39.95	ORION	Top 8-bit telecommunications program

LANGUAGES/TOOLS

ACTION!	$79.95	ICD	50 to 200 times faster than BASIC
ACTION! RunTime Package	$29.95	ICD	Make ACTION! programs that run without the cartridge
Advan BASIC*	$29.95	ADVAN	High-powered compiled BASIC language
BASIC Turbocharger	$24.95	ALPHA	Book/disk of machine language routines for BASIC
BASIC XE	$79.95	ICD	Uses the extra memory in your 130XE
BASIC XL	$59.95	ICD	IF. . .ELSE, RENUMber commands and more. $29.95 ToolKit includes RunTime Package
Diamond OS	$29.95	USA MEDIA	ST-like desktop operating environment
Diskwiz	$29.95	ALLEN	Top-class sector editor—an old favorite
DISKIO	$32.95	CLEARSTAR	Top-class sector editor—a new favorite
GOE Desktop	$59.95	TOTAL CONTROL	ST-like desktop operating system on cartridge
HardBack!	$39.95	ORION	Back up your hard disk fast
Kyan Pascal	$69.95	KYAN	Solid 8-bit Pascal language implementation
Lightspeed C	$39.95	CLEARSTAR	Hot new 8-bit C language implementation
Lightspeed Windows	$24.95	CLEARSTAR	Windowing utility for Lightspeed C
MAC/65	$79.95	ICD	Super-fast machine language assembler
MAC/65 ToolKit	$29.95	ICD	Save hours of work with add-on macros
MYDOS	$29.95	NEWELL	Operating system has the serious user in mind
R-Time 8	$69.95	ICD	Clock cartridge used with SpartaDOS
RAM-Aid	$15.95	INNOVATIVE CONCEPTS	Coldstart switch for memory-upgraded computers
SBM	$99.95	NEWELL	Inventory control/point-of-sale program. SBM 130 is XE version, also $99.95
Scanalyzer	$29.95	ALPHA	Single-pass sector copier
Screen Design*	$24.95	ADVAN	Paint program for Advan BASIC
SCXM sector copier	$17.95	NEWELL	For 256KXL upgrade
SD/DD sector copier	$17.95	NEWELL	Make up to 153 copies and read the source disk just once
SpartaDOS Construction Set	$39.95	ICD	Operating system that's the favorite of memory upgraders and hard disk owners
SpartaDOS ToolKit	$39.95	ICD	SpartaDOS utility package

SpartaDOS X	$79.95	ICD	SpartaDOS on a cartridge leaves you more memory
SuperDOS*	$20	TECHNICAL SUPPORT	Easy, powerful DOS 2.5 variation
Ultra Menu/DOS	$29.95	CSS	Convert single density to double, ect.

PRINTING

AwardWare	$14.99	HI-TECH	Print awards, certificates
Billboard	Shareware	SHEPHERD	B-I-G printouts
CardWare	$9.99	HI-TECH	Nifty card-printing software
Daisy-Dot II	$10	ROY GOLDMAN	Fancy fonts and graphics for your dot matrix printer
Icon Disk	$19.95	XLENT	For Typesetter and Rubber Stamp
Magniprint II+	$24.95	ALPHA	Print in all Graphics modes
Megafont II+	$24.95	XLENT	All-around printing utility
Newsroom	$49.95	SPRINGBOARD	8-bit desktop publishing software
News Station	$29.95	REEVE	8-bit desktop publishing software
News Station Companion	$29.95	REEVE	Images for Reeve News Station
Page Designer	$29.95	XLENT	8-bit desktop publishing sofware
PartyWare	$14.99	HI-TECH	Print invitations and more
Picture Disk	$19.95	XLENT	For Typesetter and Rubber Stamp
Print Shop	$24.95	BRODERBUND	Still the number one printing program
Print Shop Companion	$34.95	BRODERBUND	More tools for Print Shop
Print Shop Fonts & Borders 1-5*	$14.95 each	NO FRILLS	Series of original designs for Print Shop
Print Shop Interface	$29.95	XLENT	Convert images between P.S. and XLENT's print programs
PrintPower	$14.99	HI-TECH	Easy page design like Print Shop
Printwiz	$29.95	ALLEN	Powerful and versatile printing utility
Publishing Pro	$39.95	REEVE	Desktop publishing software
Quik-Pix	$29.95	WHITE LION	Converts Print Shop icons for use in AtariWriter Plus files
Quik-Pix PC	$29.95	WHITE LION	Converts Print Shop icons for PaperClip files
Rubber Stamp	$29.95	XLENT	Puts graphics and text on the same page
Rubber Stamp Graphics Library	$29.95	WHITE LION	Visual images for XLEnt's Rubber Stamp
Schematic Designer	$24.95	ALPHA	Create the electronic gadgets of your dreams
Super 3-D Plotter II*	$29.95	ELFIN MAGIC	Outstanding solid modeler drawing tool
Typesetter	$34.95	XLENT	Full-featured page designer software
Typesetter Graphics Library	$26.95	WHITE LION	Graphics for XLEnt's Typesetter
Video Juke Box	$10	SHEPHERD	Flashy screen displays using Print Shop graphics

WORD PROCESSING

First XLEnt Word Processor	$29.95	XLENT	One of the best available today
Letter Perfect	$49.95	LJK	Still a good tool

Richman's 80-Column Word Processor	$39.95	CSS	All-software 80-column program
TurboWord 80 *	$49.95	MICROMISER	80-column word processor compatible with Turbobase

PRODUCTIVITY

Celebrity Cookbook	$29.99	USA MEDIA	Recipes and diets of famous people
TurboBase *	$159.95	MICROMISER	PC-Quality business database
TurboBase 80 *	$179.95	MICROMISER	High-powered 80-column database for business
Circuit Database	$12.95	ELFIN MAGIC	Fine 8-bit database
Data Perfect	$79.95	LJK	Old favorite 8-bit's best database
Elite Personal Accountant	$39.95	CLEARSTAR	Home finance manager
InSyst	$34.95	SOSOFT	Personal accounting software
Loan Department	$69.95	LJK	Play "What if?" with loan possibilities
Maillist	$19.95	ARTWORX	Mailing list software
Megafiler	$19.95	XLENT	Database/mailing list software
Miles Payroll System	$99.95	MILES	Small business payroll program

MUSIC

CZ Librarian *	$39.95	HYBRID ARTS	Patch filer for Casio CZ keyboards
DX Editor	$59.50	HYBRID ARTS	Shape sounds for Yamaha DX keyboards
DX Librarian *	$59.95	HYBRID ARTS	Save patches for Yamaha DX keyboards
GenPatch	$74.50	HYBRID ARTS	Versatile patch editor
Guitar Wizard	$29.95	BAUDVILLE	Learn to play the guitar, find chords fast
MidiTrack II *	$174	HYBRID ARTS	Hardware/software system makes your XL a MIDI recording studio
MidiTrack III *	$187	HYBRID ARTS	128K version of the above, for 130XE only
Mirage Editor (130 only)	$93.50	HYBRID ARTS	Shape sounds for Ensoniq synthesizers
Music Construction Set	$14.95	ELECTRONIC ARTS	Well-known music creator, uses standard notation

ENTERTAINMENT

Alternate Reality: City	$29.95	DATASOFT (EA)	Vast-scale graphic adventure
Alternate Reality: Dungeon	$29.95	DATASOFT (EA)	Colorful sequel to Alternate Reality
Autoduel	$39.95	BRODERBUND	Road Warrior time, and you're the good guy
Battle of Antietam	$49.95	SSI (EA)	Re-create this classic Civil War battle
Beach-Head I and II	$14.95	ACCESS	Smash the Mad Leader's fortress
Beach Landing	$29.95	WEEKLY READER	Strategy arcade game based on D-Day
Bismarck	$29.95	DATASOFT (EA)	Sink the impregnable German warship
Bop 'N Wrestle	$29.95	MINDSCAPE	Pro Wrestling at its flashiest
BoulderDash Construction Kit	$19.95	EPYX	Create new screens for the classic game
Bridge 5.0	$29.95	ARTWORX	Learn to play bridge
Bruce Lee	$9.95	DATASOFT (EA)	Classic hand-to-hand combat simulator

Classy Chassy	$9.95	CLEARSTAR	Hot pinball game simulation
Clear for Action	$30	AVALON HILL	Design your own sea battles
Combat Chess	$25	AVALON HILL	Chess with a twist
Compubridge	$19.95	ARTWORX	Learn the ins and outs of bridge
Computer Ambush	$59.95	SSI (EA)	Man-to-man Squad combat in WWII Europe
Computer Quarterback	$14.95	SSI (EA)	Football simulation challenges
Conan	$9.95	DATASOFT (EA)	Hack and slash with the famed barbarian brute
Cross Town Crazy 8	$19.95	XLENT	Play Crazy Eights cardgame via modem
Crosscheck	$9.95	DATASOFT (EA)	A different kind of computer crossword
Crossword Magic	$29.95	MINDSCAPE	You don't need a newspaper for this one
Cycle Knight	$19.95	ARTWORX	Medieval biker arcade game
Eternal Dagger	$39.95	SSI (EA)	Fantasy quest role-playing
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Flight Simulator II	$49.95	SUBLOGIC	You can really learn how to fly with your 8-bit
Gauntlet	$34.95	MINDSCAPE	Barbarian A-Team fights monsters galore
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Mech Brigade	$59.95	SSI (EA)	What happens if NATO takes on the Soviet bloc in the 1990s
Mercenary: Escape from Targ	$9.95	DATASOFT (EA)	3-D graphics as you work your way off a strange planet
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Phantasie II	$39.95	SSI (EA)	Back to the lair of the Dark Lords in this sequel
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Zorro	$9.95	DATASOFT (EA)	Acrobatic sword-fighter in hot graphics screens

Sources for 8-Bit Atari Products

Over 65 manufacturers and publishers

Following are the addresses and phone numbers of the manufacturers (in alphabetical order) of the over 275 available 8-bit Atari products listed in **Antic's** Seventh Annual Shoppers Guide. Generally these manufacturers are willing to ship you any of their products which you cannot conveniently obtain from a local retailer, or from a mail-order supplier who advertises in **Antic**.

Often, shipping charges or sales tax must be added to the cost of your order. So it is best to check with a manufacturer for the latest total price—either by phone or by mail—before you send any payment (by check, money order, or credit card number). Companies providing toll-free 800 phone numbers tend to prefer that these toll-free lines be used for credit card purchases, not simply for questions about the products.

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ACCESS SOFTWARE, 545 West 500 South, Bountiful, UT 84010. (801) 298-9077, (800) 824-2549.

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(AEC) AMERICAN EDUCATIONAL COMPUTER, 7506 N. Broadway, Suite 505, Oklahoma City, OK 73116. (405) 840-6031, (800) 222-2811.

ALLEN MACROWARE, P.O. Box 2205, Redondo Beach, CA 90278. (213) 376-4105.

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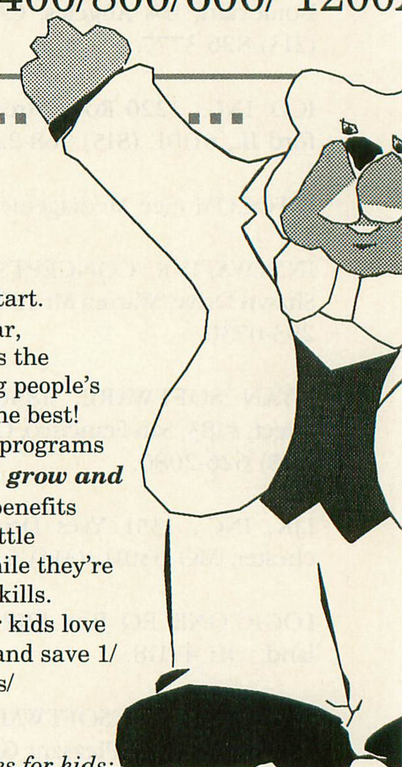
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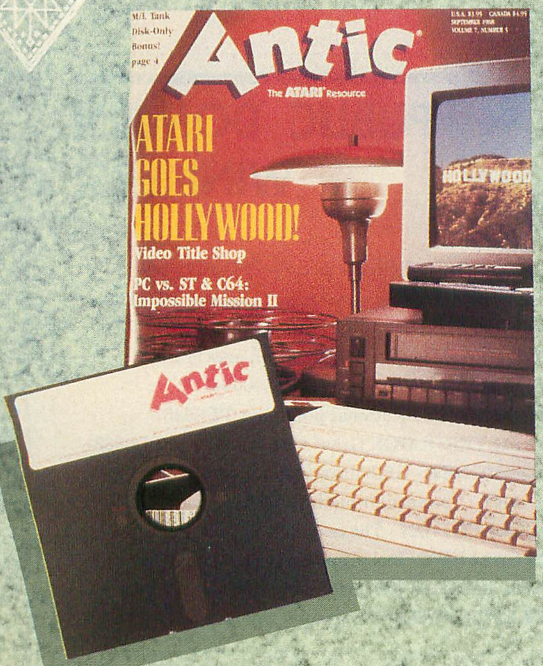
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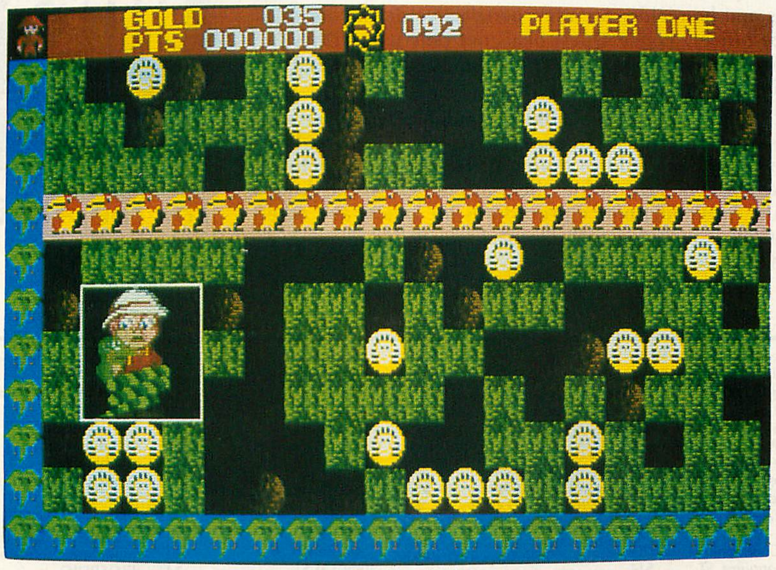
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ROCKFORD: THE ARCADE GAME

ST vs. PC review By Steve Panak

Just what we needed: another sequel to Boulder Dash. But **Rockford: The Arcade Game** promises a whole new experience—*based* on Boulder Dash, not just another version of it. That's too bad, because another version of Boulder Dash might have offered more.

Your goal is to move through various mazes and levels (a total of 80 combinations), collecting items and avoiding dangers. In the original, you collected diamonds while avoiding falling rocks and exploding butterflies. But Rockford puts you in settings such as outer space or the Old West. So the treasures and monsters are as diverse as your environments. You'll pursue Indian pennies and suns while avoiding tumbleweeds and comets. Unfortunately, all this diversity is overshadowed by the familiar theme of the program.



I think the problem is that when the video veneer is stripped away, at the core is only your standard collection game again. Pac-Man and hundreds of others can call themselves Rockford's ancestors, in one way or another. I just wasn't taken with this game. But those who are—and there will be Rockford fanatics—will revel in the fast action and brilliant animation. Arcade-quality animated sequences appear at key points throughout play which, with 80 screens, is certain to last awhile. As usual with arcade games, the manual and instructions are sparse. Completing the game depends mostly on trial and error, with patience and fast reflexes helping immeasurably.

While the ST's speed and image are just about as expected (fast and distinct), the IBM's CGA graphics are also surprisingly sharp. Rockford selects the required graphics mode for you (anything but monochrome will do). This makes loading a snap. And the PC version handles quite nicely despite its keyboard control. We might as well face it—the IBM PC compatible is a business machine. I know of few users who have a game port, much less a joystick.

Rockford treads ground that the originals covered long ago. So why not just reproduce the originals? Like fine art and good music, the classic video games improve with age. I'd love to have a true arcade-quality Asteroids, or maybe Galaga or Xevious. Or even Pac Man. Certainly the ST and PC can handle these. But although I cannot recommend Rockford sight unseen, some arcade afficionados might find it worthwhile. And there will be a few people who won't be able to put it down. ▲

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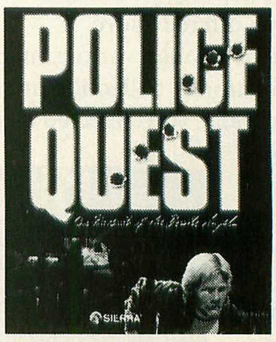
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Tower Toppler takes you to the planet Nebulus, where evil forces have built seabed-based towers. As senior operative for Destructo, Inc. you race your MK-7 minisub to the towers, which you must scale while avoiding mutant molecules, falling boulders, attack robots, slime, disintegrating ledges, and apparently impenetrable barriers. The towers' 3-D rotation adds an extra dimension to this action-packed maze race.

$49.95, color. Epyx, 600 Galveston Drive, Redwood City, CA 94063. (415) 368-3200.

CHRONO-QUEST

Chrono-Quest ($49.95) is the first adventure game from Psygnosis, and takes up a whole four disks with its fiendish plot twists. A hit in France under the name "Explora," the game sends you from 1920 into the future and around the world, in a quest to find your father's Time Machine and clear yourself of his murder.

$49.95, color. Computer Software Service (Psygnosis), 2150 Executive Drive, Addison, IL 60101. (800) 422-4912; in Illinois (800) 331-SOFT.

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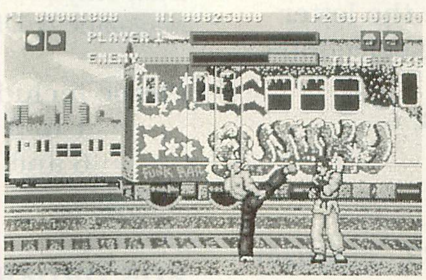
You and several endearing, Tolkienesque characters search for the stolen Karna in **Warlock**, a full-color, animated action-adventure game featuring 20 increasingly difficult levels and digitized sounds. This new game from the people who brought you Dark Castle is geared toward the beginner, although it's still challenging for more experienced players.

$34.95, color. Three-Sixty Pacific, Inc., 2105 South Bascom Avenue, Suite 290, Campbell, CA 95008. (408) 879-9144.

BIONIC COMMANDO, STREET FIGHTER

CAPCOM U.S.A., Inc., a leading manufacturer of arcade and home video entertainment, enters the ST market with two translations of their successful arcade games. In **Bionic Commando** ($29.95), you are an android soldier of the future, struggling against the relentless onslaught of invading forces, trying to fight your way into their fortress headquarters.

Going from science fiction to martial arts adventure, CAPCOM's other game is



Street Fighter ($39.95). Gentlemanly conduct won't get you any points in this no-holds-barred contest. Karate sluggers Ryu and Ken travel the world, punching, kicking and screaming through Japan, England, China, Thailand and the U.S.

$39.95, color and joystick. CAPCOM U.S.A., 1283-C Mountain View/Alviso Road, Sunnyvale, CA 94089. (408) 745-7081.

BETTER DEAD THAN ALIEN

Prepare to do battle as you and galactic hero Brad Zoom face the most revolting life forms ever to pollute the universe in **Better Dead Than Alien**, a spiffed-up Space Invaders clone with sharp graphics, plenty of sound effects and a bit of humor. As the waves of colorful aliens attack in this multi-level shoot-'em-up, you can wipe them out by yourself or in competition with a friend in simultaneous dual player mode.

$34.95, color. Discovery Software (Oxford Digital), 163 Conduit Street, Annapolis, MD 21401. (800) 342-6442.

SKYCHASE, OPERATION: CLEAN STREETS SPACE RACER

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You are Earth's sole representative in an intergalactic contest in **Space Racer**. 3-D animation and graphics add to the fun as you dodge other racers or blast them out of the sky, speeding over three alien worlds in a desperate attempt to stay alive.

Color and joystick. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (415) 492-3200.

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ST Flight Challenges

By Wolf Griffey

JET

From SubLOGIC, makers of Flight Simulator II, **Jet** is a good start for a potentially great combat aircraft simulator. It has a well thought-out format and seems to provide a powerful internal platform on which improvements could be made. For the new simulator pilot, Jet is a very, very good starter.

Yet, for hardened pilots or old jocks there is still much to be desired. I have put in a few hours in the *real-life* ancestors of the F-16 Falcon and F/A Hornet. And considering the marvelous performance of these airplanes and their weapons systems, Jet seems to fall short.

As an experienced simulator flier, I found that Jet's graphics gave me a feeling of slow motion in a high speed environment. The control response was below the level I expected, which made for a most agonizing period of combat. The handling was so jerky that I went back to free flight to try putting my finger on the problem. The graphics need more solidity too. These jet aircraft can look like the most graceful of angels in a tight turn and climb.

To test my suspicion that the background updating was not smooth enough, I did a beautifully executed eight-point roll with only one movement of the stick. (The Blue Angels should be so good.) Instead of the nice smooth roll I expected, I was presented with eight frames of the plane freezing and reappearing in stages of a roll. A much faster update is needed to keep hot sticks from always overshooting their targets and getting lost. You learn to anticipate this problem, but smoother response would be nice and make things much more realistic.

Another problem is the cockpit layout. Jet uses a generic cockpit for two very different aircraft. The F-16 has one engine, the F/A 18 has two. Yet Jet shows only one thrust gauge for both. The instrument displays in this program are good enough for a general air-combat game. But this is a simulation, so it should be true to the planes it simulates. I was hoping for a Heading Situation Indicator, a centerpiece in a modern fighter. It also would have been slick to show the triple CRT screens of the top of the line F/A-18. And I like landing with Indicated Air Speed readouts—not a percentage of the speed of sound, as Jet requires.

The cockpit instruments need to be updated so you feel like there is a high performance aircraft wrapped around you. Fuel, weapons, gear position and altimeter readouts should be organized so the pilot can find them in a normal scan, without having to look up, down and all over the screen.

Jet already contains so many features that I believe it should be moved to a two-disk set, to make possible a higher level of play. Add some basic aerobatics to the free flight section, put in a scoring system for correct handling and you will have more than a game—a truly advanced flight simulation package.

Overall, the manual is well written. The documentation provides background and access instructions on the displays, instruments, controls and weapons available to the Jet. There is a great deal of material, but it is all broken down into easy, readable and logical chapters. A novice fresh from watching the demo can climb into the seat and sample free flight with little or no trouble. Taking a few minutes to do a self-test by flying the written course adds to the pilot's knowledge of two ships' basic handling traits.

Jet is a good program for the first-time computer pilot. Using it as a starter kit to learn control and feel is the way to go. Jet is not what my hardcore gaming friends and I look for in real-time simulation play. But if Jet became smoother, faster and more colorful, it could be the benchmark against which others must be judged.

$49.95, color. SubLOGIC Corp., 713 Edgebrook Drive, Champaign IL, 61820. (217) 359-8482.

DIVE BOMBER

It's May 24, 1941. The powerful German battleship Bismarck has sunk the British cruiser HMS Hood and is now free to roam the North Atlantic and sever vital Allied supply lines. To stop the Bismarck, the Allies secretly arrange to borrow a prototype of the new top-secret U.S. Navy torpedo bomber—the Grumman Avenger.

Dive Bomber is a historical wargame with a fantasy twist—because even though the Avenger won fame as a great Navy Aircraft, it first saw action at Midway in 1942, the year after the Bismarck hunt.

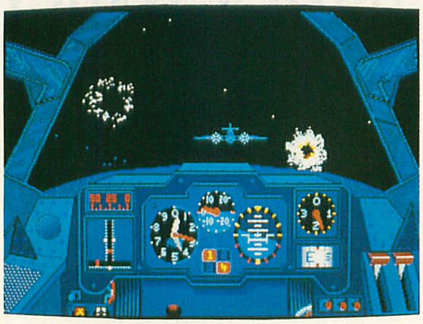
As the Avenger's crew—pilot, engineer/navigator and rear gunner—you become the main protection of the aircraft carrier leading the hunt. On each display screen, a selection box

calls your attention to whichever screen where immediate action is required. With artillery rounds and torpedoes, you must protect the HMS Ark Royal from the Luftwaffe's Dornier aircraft, U-Boats, E-Boats, and floating mines. Above all else, you must sink the Bismarck—without the Ark Royal meeting its end.

At the start of Dive Bomber, I strongly advise that you take the option of running practice missions—carrier take-offs and landings, flying, and best of all, as many torpedo runs on the Bismarck as you want to make.

The cockpit area of the Avenger is very well laid out and close to the real thing, at least for the controls needed for this type of play. The stick is responsive, and control is easy to maintain. The engineer's screen repeats this level of detail with the control layout for ignition, throttle, fuel gauges and other controls requiring your attention.

As rear gunner you fire at targets passing behind the Avenger. Navigation is a more complex position. While the navigation screen shows



the current position of Avenger and enemy forces, U-boats do not show until they surface. Watch out—if the Bismarck moves off the map before you can get to it it's then out of play for that game.

The Avenger can be controlled by either joystick or mouse. Movement is quick and sure with either. Graphics are also very good. Since the action always takes place at night over water, all the player has to watch is a black background on which the enemy will appear. The targets enlarge as they approach, giving a real feel of speed as you close in.

Score is kept on targets hit and damage to the Ark Royal and Avenger. Plus, of course, whether the Bismarck was sunk or escaped from the play area. You begin by choosing straws for a mission. (Getting the short straw is like having the entire German Air Force, surface and subsurface Navy forces totally surrounding the Ark Royal.) Each mission has a different pace and placement of enemy ships, aircraft and mines. No two missions, however many times run, will be the same.

$49.95, color. Epyx (U.S.Gold), 600 Galveston Drive, P.O. Box 8020, Redwood City, CA, 94063. (415) 366-0606.

ST Game Gallery

Virus, Final Assault, Strip Poker II, Space Cutter, Fire and Forget, Warlock



Warlock



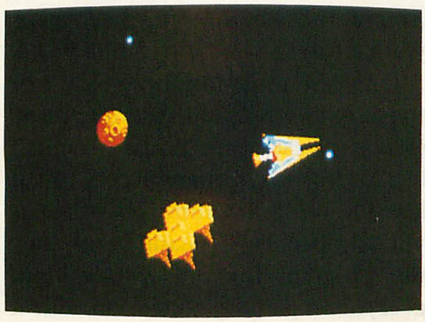
Virus

VIRUS

Virus claims to be the most infectious game ever. Maybe not, but it can certainly bring on quick symptoms of gaming fever. And the cure comes only after long periods of play.

Why the fever? Simply, the graphics are among the very best I have seen on the ST, definitely of arcade quality. The colors and detail make a solidly believable 3-D background, but playing speed is not sacrificed for scenery. The pace is more than fast enough for the most hardened game players to enjoy.

Virus begins as alien seeder ships appear and quickly pass over the countryside, spreading a slimy red virus which poisons everything it touches. As a Hoverplane pilot, you race to intercept these menacing alien ships before more spores can be



Space Cutter



Strip Poker II

released. Your marvelously handling craft blasts seeders from the sky with powerful laser cannons and heat-seeking missiles. Other aliens attack—drones, mutated drones, bombers, pests and fighters.

The playing area view is a breeze to interpret, so you can spend your time hunting aliens instead of reading dials. The land map shows just how little of the potential play area is actually in view of the Hoverplane. This vast area of operation does wonders for the graphic effect of the total game. The trees, houses, fields and water look as solid as in the real world. Run into any of them and it's time to go get a new Virus destroyer. The contouring of the landscape adds a realistic thrill as it appears and passes when you make a low attack.

You control the Hoverplane by mouse or keyboard. I started out with the mouse and discovered that, just as it warns in the manual, the Hoverplane may lag behind the mouse movement. Three quick and spectacular crashes later I was on keyboard control. I firmly believe that the mouse is the first thing that the aliens infect. However, you can reconfigure the keyboard before the start of Virus action. And I did just that, designing a layout that felt natural to me.

—WOLF GRIFFEY

$29.95, color. Rainbird, P.O. Box 2227, Menlo Park, CA 94026. (800) 227-6900.

FINAL ASSAULT

Ever watch in amazement those TV documentaries about the latest expedition to scale some big, treacherous mountain somewhere? It always seemed too dangerous and cold for my tastes. But I might be interested, if someone could devise a way for me to do it without the danger or the subzero temperatures.

Epyx has come to answer that challenge with **Final Assault.** Graphically, the game is beautiful, looking much like the company's Summer, Winter and World Games efforts. The gameplay is much the same too, requiring a certain amount of dexterity and a good memory to succeed in scaling even the smallest peaks.

What's really exciting about this release is that it goes in a direction more software publishers should attempt. Plenty of companies are reproducing or cloning hits from the arcades. Plenty of companies are doing adventure games in both past and future scenarios. Plenty of companies are doing war and sports simulations. But there are very few companies interested in pioneering exciting simulations outside the software main-

stream.

I doubt that Epyx got many user response cards wanting a mountain-climbing game. But I believe most players will get a certain excitement from playing Final Assault and a certain sense of accomplishment when they get to the top of the biggest mountain.

There are six trails choose to from, along with a training hill for getting used to the game's mechanics. You can take on the paths solo, in pairs or threesomes. The names of the six tests give a good idea of what's ahead. There's Hat Trick, Side-Burner, Edge Of Fright, Footloose, Knucklehead and Consider Me Gone.

The first step is to pack a rucksack. Although one is already packed for you, it is possible to change those selections. First-timers would probably do just as well to stay with the suggested items. Whether rock-climbing or climbing on ice, it is necessary to have the right equipment on your feet and hands before you even attempt to get going.

Unless you do some mountaineering and know the difference between crampons and pitons, a four-page directory of climbing terms at the back of a 25-page rule book will be useful. The training trail is both helpful and a nuisance. When playing at that level, hints of things you might want to do or things you might want to do differently appear regularly. It is necessary to press the [ESC] key to remove the message and continue with the game.

After that, it's a matter of figuring out the proper sequences of joystick moves and button pushes to get the climber up the side of the mountain. Most of your time will be spent climbing, although there are segments of flat travel between climbs when you'll need to walk, test ground and sometimes jump over small crevasses.

On the longer journeys, it will be necessary to have along enough provisions to keep food in your belly and liquids in your system. Unless you like your food raw, it would be a good idea to keep a small stove in that backpack. Using the joystick to move an on-screen cursor around, you can switch from carrying or wearing certain items, to putting them in the backpack and visa versa. If you're on a climb though, don't forget to strap yourself to the mountain first.

Don't be fooled by how easy it is to get to the top of the training slope or the easiest of the trails. It's much harder and the program gets much less forgiving for minor mistakes as you advance. Final Assault may not be the program that fills the void in everyone's gaming collection. But it is a worthwhile addition for anyone who ever looked up at those magnificent peaks and daydreamed about climbing them.—RICK TEVERBAUGH

$49.95, color. Epyx, 600 Galveston Drive, Redwood City, CA 94063. (415) 366-0606.

STRIP POKER II

Strip Poker, one of the most tasteless ST games available (at least commercially, through a major publisher), has gotten better. Or do I mean worse? I guess that depends on your point of view.

Strip Poker is one program that won't surprise you when you run it. The name is self-explanatory and everyone knows what strip poker is. What you probably don't know is that your opponents in this latest version of the game are digitized images. Which means that these women (and men, on one of the data disks) are no longer merely electronic paintings. No, these images are now more like grainy photographs.

Other than some sound effects and a different card style, the game plays just as it always has. Owners of the original may wish to check with Artworx concerning the availability of digitized data disks for their current version, and new purchasers should make sure that they're getting the new version.—STEVE PANAK

$39.95, color. Artworx, 1844 Penfield Road, Penfield, NY 14526. (716) 385-6120.

SPACE CUTTER

Space Cutter takes place in the largest arena I have ever seen on a computer screen. And the ultimate score is the highest anyone can obtain, infinity. The galaxy is occupied by a race of intelligent spaceships which have enslaved most of the human population. To gain freedom you must reach the Five Perfect Solids. You are a lone human, flying your Meson Fighter through the enemy-occupied galaxy by way of the Whirligig, a network of over four billion mini-universes linked by Stargates. To get to the Fifth Solid alone requires a route of 32 gates.

Your Meson Fighter is capable of high speeds and extremely fast turns. For protection it is outfitted with target-seeking missiles and chaff pods. The missiles have a quick response, streaking toward the target along the shortest route possible. Unfortunately this route might intersect with the fast-maneuvering Meson itself. Chaff, on the other hand, will not destroy the Meson, but will go for the highest priority target. Enemy ships come in many types and their aggressiveness increases as the Meson travels deeper into Whirligig.

Control is by mouse only. Chaff and missiles are fired by button selection. A control panel for the navigation and status of the Meson can be brought up for viewing at any time during a sector run. It provides a mapping of the stargates and supply depots.

Overall, Space Cutter is fairly fast paced and active. The graphics have a good, solid feel, with lively colors and background. Good scrolling speed makes going at high rates more than just interesting, adding a touch of carefree danger and spice. The graphics for sector entry and exit are

fun to watch. —WOLF GRIFFEY

$29.95, color. Rainbird, P.O. Box 2227, Menlo Park, CA 94026. (800) 227-6900.

FIRE AND FORGET

Fire and Forget is a road racing game along the lines of Titus' earlier Crazy Cars. But where Crazy Cars had a poor control system and rather uninteresting play mechanics, Fire and Forget is easy to control, and has some good sound effects and graphics. It's also fun to play, if somewhat repetitious.

Fire and Forget is set far in the future. The Earth is in the grip of international terrorists who have started wars in seven areas of the globe. You must stomp out these brush fires that threaten to explode into nuclear conflagration.

You'll be driving the Thunder Master, a sort of supercar with a powerful missile launcher mounted on top. (Wish I had one of these in rush hour traffic!) In a one-player game, only the Thunder Master is available. But in a two-player game, the other player controls the Thunder Cloud, a jet plane that deals with your airborne enemies. Both players can use joystick or keyboard control. There are three levels of difficulty, with level 1 being good for anyone lacking super reflexes. The high score is automatically saved to disk, which is a nice touch.

The map of the world shows the seven trouble spots. You can deal with them in any order. Simply use the joystick to select the one you want and press the trigger. The screen clears and things start getting exciting.

Your viewpoint is from behind and slightly above the car. Speed and steering are controlled with the joystick. To fire, press the trigger. You can't have more than about four missiles in the air at once, so don't go around firing indiscriminately. You earn points for obliterating enemies with your missiles. Airborne choppers, roadside pillboxes, barbed wire and other obstacles help develop your steering ability and the quickness of your trigger finger. Destroyed enemies disappear in a satisfying explosion, complete with realistic sound. Sometimes the road will split and you must then choose which fork to drive on, though both will eventually lead to the end.

The key ingredient to surviving Fire and Forget is fuel. The line across the top of the screen shows how much of this precious resource you have left. You'll use it up quickly as you travel, though not at a rate proportional to your speed. You can refuel at green or blue fuel depots positioned along the road, and you pay a huge fuel penalty whenever your vehicle explodes from a hit. If you run out of fuel, the game is over. One word of warning: Don't use the blue cisterns to fill up the jet plane, because it will explode—it can only fill up from the green cisterns.

Fire and Forget's graphics are slightly better than those of Crazy Cars. However, the explosions are very realistic —the sound was probably digitized. Overall, I like this game. It's fast and furious, and even novices can survive long enough to have a good time.—DAVID PLOTKIN

$39.95, color. Titus Software, 20432 Corisco Street, Chatsworth, CA 91311. (818) 709-3692.

WARLOCK

Warlock is playable, fun and has good graphics, animation and some real challenges. You'll guide a warlock in his quest for the stolen Karna, a jewel of the underworld. You must also recapture eight magical objects scattered throughout the game's 20 screens.

In this joystick-operated game, the warlock can move, jump, and go up and down levels when appropriate. He is armed with a scepter that fires energy bolts at the different enemies featured on each level. Some enemies move blindly and are easily avoided; others bounce around and are hard to hit; still others can freeze your wizard in place, which can be very dangerous; and then there are those who shoot back.

Your enemies all are highly detailed and well-animated: the zombies lurch, the bats flap their wings, the ghosts flit back and forth. There are some indescribable enemies as well, and discovering how to defeat newly encountered creatures is part of the fun. Shooting enemies can be profitable too, as some leave gifts that you may find extremely useful in the upper levels.

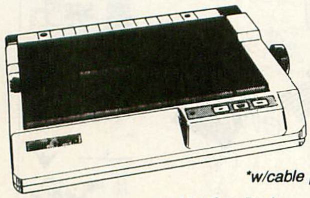
The sound in Warlock is noteworthy. Aside from explosions and such, flashes of lightning are followed by the crash of thunder, and the echoes of digitized night sounds are uncanny.

The scoreboard at the top of the screen keeps track of the number of items you have recovered, your score, the power of your scepter and your vitality. Without power you can't shoot at your enemies, and the game is over when vitality drops to zero. As you explore, you'll find items that restore your power and vitality, as well as jewels that partially protect you from the assaults of the denizens of the underworld.

Overall, I like Warlock a lot and have managed to play 12 levels. You need to keep an eye on your vitality, because some areas which look harmless are actually very draining. One problem is that there can only be two fireballs (such as those fired from your scepter) on the screen at any time. Thus, if an enemy is firing at you, you can't shoot back. This should be fixed, as you might be unable to shoot at the most embarassing times. Aside from this, though, I recommend Warlock as an entertaining shoot-em-up.—DAVID PLOTKIN

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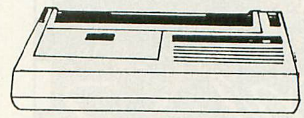
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Leader Board Double Pack	$9.99

Activision:

Music Studio	$19.95
Great American Road Race	$9.99

Broderbund:

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Graphic Lib. I,II or III...ea.	$14.95

Electronic Arts:

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One on One	$8.95
Lords of Conquest	$8.95
Super Boulderdash	$8.95
Music Construction Set	$8.95

ATARI ST

Access:

10th Frame	$22.95

Activision:

Music Studio	$27.95

Broderbund:

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Typhoon Thompson	$21.95

Electronic Arts:

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Epyx:

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Impossible Mission 2	$22.95
Winter Games	$11.95

Firebird:

Universal Military Simulator	$28.95

ATARI ST

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Avatex™ 2400 Modem $149.95

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5-1/4

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SKC:

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DSHD	$13.95

Generic:

DSDD	$4.95

Verbatim:

SSDD	$8.99
DSDD	$11.50

3.5

Maxell:

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DSDD	$17.95

Bonus:

SSDD	$10.95
DSDD	$13.95

Verbatim:

SSDD	$12.95
DSDD	$18.95

SKC:

SSDD	$9.95
DSDD	$13.99

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Kraft PC Joystick Card	$27.95
Kraft Maze Master	$8.95
I Controller	$13.95
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QVS-40 3½	$9.95

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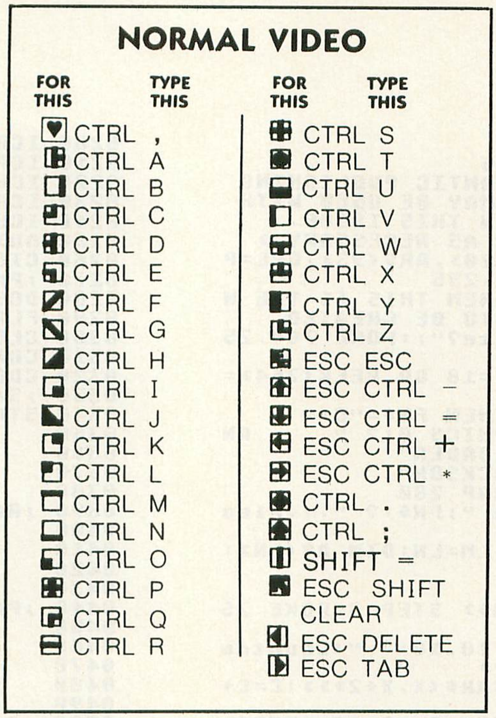
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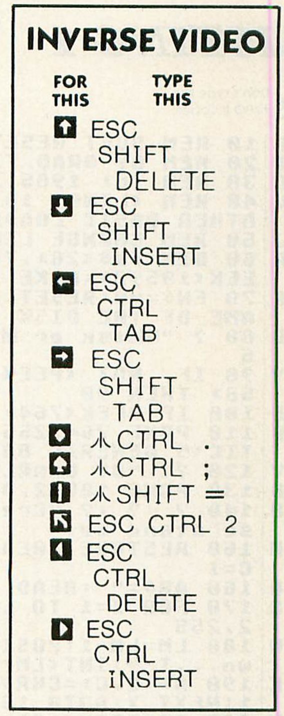
TYPING SPECIAL ATARI CHARACTERS

The Atari Special Characters and the keys you must type in order to get them are shown below:

For [CONTROL] key combination, *hold down* [CONTROL] while pressing the next key. For inverse [CONTROL] [A] through [CONTROL] [Z], press the [◪] key—or [人] on the 400/800—then *release* it before pressing the next key. (Press [◪] or [人] again to turn off inverse.) For [ESC] key combinations, press [ESC] and then *release* it before pressing the next key.

Carefully study the chart above and pay close attention to differences between lookalike characters such as the slash key's [/] and the [CONTROL] [F] symbol [◪].





TYPO II AUTOMATIC PROOFREADER

TYPO II automatically proofreads **Antic**'s type-in BASIC listings. Type in the listing below and SAVE a copy to disk or cassette. Now type GOTO 32000. At the prompt, type in a single program line **without the two-letter TYPO II code at the beginning**. Then press [RETURN].

Your line will reappear at the bottom of the screen. If the TYPO II code does not match the code in the magazine, then you've mistyped your line.

To call back a previously typed line, type [*], then the line number, then [RETURN]. When the completed line appears, press [RETURN] again. This is how TYPO II proofreads itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000. To remove TYPO II from your program, type LIST "D:FILENAME",0,31999, then [RETURN], then NEW, then ENTER "D:FILENAME", then [RETURN]. Now you can SAVE or LIST your program to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↰":POSITION 11,1:? "TYPO II "
EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↰":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

MACRO [RESET]

Article on page 24

LISTING 1

Don't type the TYPO II Codes!

```
ZC 10 REM SOFT RESET
AT 20 REM BY BRAD TIMMINS
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
OG 70 FN$="D:RESET.EXE":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
RD 80 ? "}Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "     AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
IP 1000 DATA 183
QE 1010 DATA 255255085006255006165012141
   2050006165013141206006169122133012169
   0061330131692361410680031690006
ER 1020 DATA 141069003032185006169000141
   0840060961730312082010032080008173084
   006073001141084006173084006240
QB 1030 DATA 027169209141068003169006141
   0690030321850061690021330841690001330
   85169013141074003096169236141
UB 1040 DATA 068003169006141069003032185
   0061082050061690091410660031690001701
   41072003169002141073003032086
SS 1050 DATA 228096000000000000125029029
   0290290800790750690560520500440490500
   58071079084079032051049048048
AW 1060 DATA 048155125083111102116032082
   1011115101116032110111119032079070070
   155224002225002085006
```

LISTING 2

```
0100 ;SOFT RESET, SOURCE CODE
0110 ;BY BRAD TIMMINS
0120 ;(c)1988, ANTIC PUBLISHING
0130     *=  $0655
0140 ;IOCB equates
0150 PUTREC = $09
0160 EOL = $9B
0170 ICCOM = $0342
0180 ICSTA = $0343
0190 ICBAL = $0344
0200 ICBAH = $0345
0210 ICPTL = $0346
0220 ICPTH = $0347
0230 ICBLL = $0348
0240 ICBLH = $0349
0250 AUX1 =  $034A
0260 CIOV =  $E456
0270 ;Program Equates
0280 DOSINI = $0C
0290 FLAG =  $0654
0300 CLEAR = $7D
0310 CONSOL = $D01F
0320 CDOWN = $1D
0330 ;Save old RESET vectors.
0340 START
0350      LDA DOSINI
0360      STA VECTOR
0370      LDA DOSINI+1
0380      STA VECTOR+1
0390 ;Replace with new address.
0400      LDA # <NEWVEC
0410      STA DOSINI
0420      LDA # >NEWVEC
0430      STA DOSINI+1
0440 ;Print "OFF" message.
0450      LDA # <OFF
0460      STA ICBAL
0470      LDA # >OFF
0480      STA ICBAH
0490      JSR PRINT
0500 ;Set FLAG's value to "OFF"
0510 ;and exit.
0520      LDA #0
0530      STA FLAG
0540      RTS
0550 ;
0560 ;This is executed whenever
0570 ;RESET is pressed:
0580 ;    Has OPTION been pressed?
0590 ;If so, change FLAG's value:
0600 ;  0=Continue
0610 ;  1=Print "OFF" return to BASIC
0620 ;
0630 NEWVEC
0640      LDA CONSOL
0650      CMP #3
0660      BNE NVEC1
0670 ;
0680 ;Change FLAG's value.
0690      LDA FLAG
0700      EOR #1
0710      STA FLAG
0720 NVEC1
0730      LDA FLAG
0740      BEQ OFF1
0750 ;
0760 ;Display "POKE842,12:GOTO 31000"
0770      LDA # <GOTO
0780      STA ICBAL
0790      LDA # >GOTO
0800      STA ICBAH
0810      JSR PRINT
0820 ;Put cursor at 2,0
0830      LDA #2
0840      STA 84
0850      LDA #0
0860      STA 85
0870 ;Put Editor in Forced Read mode
0880 ;and return to BASIC.
0890      LDA #13
0900      STA AUX1
0910      RTS
0920 ;
0930 ;Program is off. Print "OFF"
0940 ;and exit through old vectors.
```

```
0950 OFF1
0960        LDA # <OFF
0970        STA ICBAL
0980        LDA # >OFF
0990        STA ICBAH
1000        JSR PRINT
1010        JMP (VECTOR)
1020 ;
1030 ;IOCB PRINT subroutine
1040 PRINT
1050        LDA #PUTREC
1060        STA ICCOM
1070        LDA #0
1080        TAX
1090        STA ICBLL
1100        LDA #2
1110        STA ICBLH
1120        JSR CIOV
1130        RTS
1140 ;
1150 VECTOR
1160        .WORD 0,0
1170 GOTO
1180        .BYTE CLEAR,CDOWN,CDOWN,CDOWN
,CDOWN,"POKE842,12:GOTO 31000",EOL
1190 OFF
1200        .BYTE CLEAR,"Soft Reset now O
FF",EOL
1210 LABEL
1220        *=  $02E0
1230        .WORD START
1240        .END
```

---

mighty mailer becomes an inventory database

MIGHTY LISTER

Article on page 31

LISTING 1

Don't type the TYPO II Codes!

```
LP 5 REM MIGHTY LISTER
HO 20 REM (c) 1988, ANTIC PUBLISHING
WN 33 GRAPHICS 2:POKE 710,186:POKE 712,18
   6:POKE 708,3:POKE 709,3:POSITION 6,3:?
   #6;"MIGHTY"
LO 36 POSITION 6,5:? #6;"LISTER"
ON 40 DIM SUB$(255),RAND$(260),FILENAME$(
   14),EOL$(2),IO$(7),MSG1$(28),MSG2$(24)
   ,MSG3$(36)
KK 60 MSG3$="IF PRINTER READY PRESS 'A' T
   O PRINT"
BG 90 REM
QM 100 REM
BF 120 FILENAME$="D:INVNTORY":GOSUB 1330
HY 130 REM MAIN MENU
OK 135 GRAPHICS 0:POKE 752,1:POKE 764,255
   :POKE 82,2:POKE 756,226:POKE 702,64:PO
   KE 710,204:POKE 709,0:RAND=0
UI 150 ? :? :? "      1 - LOCATE ITEM & PR
   INT"
JV 170 ? :? "      3 - PRINT LIST"
UA 270 REM FIND ENTRY & PRINT ENVELOPES
AN 280 ? "}":POKE 702,0:POKE 752,0:POSITI
   ON 2,10:? "Locator for item to display
   ":INPUT SUB$
TS 282 ? :? "Do you want automatic printo
   ut of all locators Y/N":POKE 702,64:GE
   T #1,A:IF A<>89 THEN 290
SC 284 A=65:GOSUB 1070:GOSUB 1160:? FILE$
   (START,RAND+1)
SF 286 GOTO 284
DV 320 ? :? "Press SPACEBAR to get next
    locator":? :? FILE$(START,RAND+1)
QJ 360 REM SERIALLY PRINT ENVELOPES
CV 410 IF A=32 OR A=65 THEN 370
QT 430 REM PRINT COMPLETE LIST
CK 440 ? "}":? :? MSG3$:POKE 764,255
NG 441 IF PEEK(764)<>63 THEN 441
QZ 450 REM
RB 460 REM
CJ 470 POKE 764,255:CLOSE #4:OPEN #4,8,0,
   "P":PRINT #4;FILE$:CLOSE #4
SC 490 REM SCREEN COMPLETE
YV 530 REM CHANGE MENU
LU 550 ? :? :? "1 - Add items":? :? "2 -
   Delete items":? :? "3 - Save Updated L
   ist"
TR 610 REM ADD NAME
VS 710 REM DELETE A NAME
UE 730 POKE 702,0:POSITION 2,6:? "Item to
    Delete";:INPUT SUB$:IF LEN(SUB$)=0 TH
   EN 540
CJ 830 REM SAVE ROUTINE
BH 860 ? :? "DEVICE:FILENAME IS ";FILENAM
   E$:? :? "Press SPACEBAR to add changes
    to this file. Press ESC to change ";
RU 865 REM
GC 940 REM MAKE NEW LIST
HI 960 ? :? "If you have a word processor
    use it tomake new files. Separate ent
   rieswith two RETURN's."
LO 990 REM PAUSE SUBROUTINE
MP 1040 IF A=65 THEN GOSUB 1220
XL 1060 REM RAND SUBROUTINE
KW 1150 REM SEARCH SUBROUTINE
CX 1160 START=START-10:IF START<0 THEN ST
   ART=1
BU 1210 REM PRINTER SUBROUTINE
SX 1230 ? "}":? :? "I/O ERROR #";PEEK(195
   ):TRAP 40000:CLOSE #4:GOTO 130
IM 1240 REM
EU 1250 IF A=65 THEN PRINT #4;CHR$(27);"1
   ";CHR$(10);FILE$(START,RAND-1):CLOSE #
   4:RETURN
WN 1270 REM LOAD MENU
VU 1300 REM LOAD ROUTINE
CU 1340 CLOSE #2:FILE$(TRUELEN)=CHR$(155)
   :TRAP 40000:GOTO 130
DS 1370 REM I/O LOAD & SAVE
```

LISTING 2

```
LP 5 REM MIGHTY LISTER
MV 10 REM BY PHILIP BATE, Ph.D.
HO 20 REM (c) 1988, ANTIC PUBLISHING
CC 30 FILELEN=FRE(0)-1100:DIM FILE$(FILEL
   EN)
WN 33 GRAPHICS 2:POKE 710,186:POKE 712,18
   6:POKE 708,3:POKE 709,3:POSITION 6,3:?
    #6;"MIGHTY"
LO 36 POSITION 6,5:? #6;"LISTER"
ON 40 DIM SUB$(255),RAND$(260),FILENAME$(
   14),EOL$(2),IO$(7),MSG1$(28),MSG2$(24)
   ,MSG3$(36)
HZ 50 EOL$(1)=CHR$(155):EOL$(2)=CHR$(155)
   :MSG1$=" PRESS RETURN FOR MAIN MENU ":
   MSG2$=" PRESS NUMBER OF CHOICE "
KK 60 MSG3$="IF PRINTER READY PRESS 'A' T
   O PRINT"
MJ 70 IO$="hhh[illegible]LV[illegible]"
QE 80 RAND$(1,86)="[illegible]"
KP 82 RAND$(87,172)="[illegible]"
SI 83 RAND$(173,260)="[illegible]"
PN 84 RAND$(200,200)=CHR$(155):ML=ADR(RAN
   D$)
BG 90 REM
QM 100 REM
LD 110 CLOSE #1:OPEN #1,4,0,"K"
BF 120 FILENAME$="D:INVNTORY":GOSUB 1330
HY 130 REM MAIN MENU
```

continued on next page

```
OK 135 GRAPHICS 0:POKE 752,1:POKE 764,255
   :POKE 82,2:POKE 756,226:POKE 702,64:PO
   KE 710,204:POKE 709,0:RAND=0
PC 140 ? :? "            MAIN MENU "
UI 150 ? :? :? "        1 - LOCATE ITEM & PR
   INT"
GN 160 ? :? "        2 - SCROLL & PRINT"
JV 170 ? :? "        3 - PRINT LIST"
YF 180 ? :? "        4 - SCREEN LIST"
VS 190 ? :? "        5 - CHANGE MENU"
SD 200 ? :? "        6 - DIR & LOAD"
LZ 210 ? :? "        7 - MAKE NEW LIST"
JG 220 ? :? :? "        ";MSG2$
ZS 230 A=PEEK(764):IF A=255 THEN POKE 77,
   0:GOTO 230
PX 240 GET #1,A:IF A=255 THEN 240
EE 250 ON A-48 GOTO 270,360,430,490,530,1
   270,940
NA 260 GOTO 130
UA 270 REM FIND ENTRY & PRINT ENVELOPES
AN 280 ? "■":POKE 702,0:POKE 752,0:POSITI
   ON 2,10:? "Locator for item to display
   ":INPUT SUB$
TS 282 ? :? "Do you want automatic printo
   ut of all locators Y/N":POKE 702,64:GE
   T #1,A:IF A<>89 THEN 290
SC 284 A=65:GOSUB 1070:GOSUB 1160:? FILES$
   (START,RAND+1)
SF 286 GOTO 284
UO 290 GOSUB 1070
TW 300 GOSUB 1160
AI 310 POKE 702,64:? "■":? :? MSG3$
DV 320 ? :? "Press  SPACEBAR  to get next
    locator":? :? FILE$(START,RAND+1)
TD 330 POKE 702,64:GOSUB 1000
MP 340 IF A=32 THEN 290
MZ 350 GOTO 130
QJ 360 REM SERIALLY PRINT ENVELOPES
MV 370 START=RAND+2:GOSUB 1120
UE 380 POKE 702,64:? "■":? MSG3$
JU 390 ? :? "Press  SPACEBAR  to scroll n
   ot print":? :? FILE$(START,RAND)
QL 400 GOSUB 1000
CV 410 IF A=32 OR A=65 THEN 370
MU 420 GOTO 130
QT 430 REM PRINT COMPLETE LIST
CK 440 ? "■":? :? MSG3$:POKE 764,255
NG 441 IF PEEK(764)<>63 THEN 441
QZ 450 REM
RB 460 REM
CJ 470 POKE 764,255:CLOSE #4:OPEN #4,8,0,
   "P":PRINT #4;FILE$:CLOSE #4
NG 480 GOTO 130
SC 490 REM SCREEN COMPLETE
PR 500 FOR I=1 TO 200:NEXT I:? :? FILE$:F
   OR I=1 TO 250:NEXT I
LR 510 IF LEN(FILE$)=0 THEN ? "NO LIST LO
   ADED":FOR I=1 TO 250:NEXT I
MV 520 GOTO 130
YV 530 REM CHANGE MENU
NK 540 ? "■":POSITION 10,2:? "     CHANGE
   MENU     "
LU 550 ? :? :? "1 - Add items":? :? "2 -
   Delete items":? :? "3 - Save Updated L
   ist"
GO 560 ? :? "4 - Main Menu (Without savin
   g list)":?
EB 570 POSITION 3,20:? "SAVE BEFORE RETUR
   NING TO MAIN MENU"
XF 580 POSITION 8,18:? MSG2$:GOSUB 1020
MC 590 POKE 702,0:POKE 752,0:? "■":ON A-4
   8 GOTO 620,720,840,130
MS 600 GOTO 130
TR 610 REM ADD NAME
KK 620 ? "■":IF LEN(FILE$)=0 THEN FILE$(L
   EN(FILE$)+1)=EOL$:POSITION 2,1:? " NEW
   LIST"
NF 630 ? :? " FILE LOADED IS  ";FILENAME$
HT 640 ? :? FILELEN-LEN(FILE$);" FREE CHA
   RACTERS IN MEMORY":POSITION 2,22:? "PR
   ESS RETURN FOR CHANGE MENU"
GG 650 POKE 752,0:POSITION 2,7:? "FIRST L
   INE";:INPUT SUB$
JB 660 IF LEN(SUB$)=0 THEN 540
HN 670 FILE$(LEN(FILE$)+1)=SUB$:FILE$(LEN
   (FILE$)+1)=CHR$(155)
XS 680 ? :? "NEXT LINE";:INPUT SUB$
RU 690 IF LEN(SUB$)=0 THEN FILE$(LEN(FILE
   $)+1)=CHR$(155):? "■":GOTO 630
QJ 700 GOTO 670
VS 710 REM DELETE A NAME
QQ 720 POSITION 2,22:? "PRESS RETURN FOR
   CHANGE MENU"
UE 730 POKE 702,0:POSITION 2,6:? "Item to
    Delete";:INPUT SUB$:IF LEN(SUB$)=0 TH
   EN 540
UJ 740 GOSUB 1070
UK 750 GOSUB 1160
UW 760 ? :? "PRESS SPACE BAR TO DELETE":?
    FILE$(START,RAND+1)
ZB 770 GET #1,A:IF A=255 THEN 770
GW 780 IF A<>32 THEN 540
VA 790 GAP=RAND-START+2
PY 800 FILE$(START,LEN(FILE$))=FILE$(RAND
   +2,LEN(FILE$))
PE 810 FILE$=FILE$(1,LEN(FILE$)-GAP)
OX 820 GOTO 540
CJ 830 REM SAVE ROUTINE
OJ 840 POKE 702,64
RR 850 IF LEN(FILENAME$)=0 THEN 890
BH 860 ? :? " DEVICE.FILENAME IS  ";FILENAM
   E$:? :? "Press SPACEBAR to add changes
    to this file. Press  5  to change ";
RU 865 REM
JL 870 ? "to a new":? "DEVICE.FILENAME";:G
   OSUB 1000
LJ 880 IF A=32 THEN 900
NI 890 ? "■":POSITION 1,10:? "DEVICE.FILE
   NAME TO SAVE":INPUT FILENAME$
CC 900 IF LEN(FILENAME$)=0 THEN 130
ME 910 TRAP 930:CLOSE #2:OPEN #2,8,0,FILE
   NAME$:LET READ=0:X=32:MAXLEN=LEN(FILE$
   ):SADR=ADR(FILE$):GOSUB 1370
PV 920 CLOSE #2:TRAP 40000:GOTO 130
UT 930 POSITION 5,10:? "I/O ERROR #";PEEK
   (195):CLOSE #2:TRAP 40000
GC 940 REM MAKE NEW LIST
LQ 950 ? "■":? :? "        MAKING NEW FILES
    "
HI 960 ? :? "If you have a word processor
    use it tomake new files. Separate ent
   rieswith two RETURN's."
XZ 970 ? :? "You can also use this progra
   m to make lists.  Follow directions be
   low."
PF 980 POKE 702,64:FILE$="":? :? "NEW DEV
   ICE:FILENAME TO USE";:INPUT FILENAME$:
   POKE 702,0:GOTO 620
LO 990 REM PAUSE SUBROUTINE
UO 1000 POSITION 6,22:? MSG1$
OG 1010 A=PEEK(764):IF A=255 THEN POKE 77
   ,0:GOTO 1010
HC 1020 GET #1,A:IF A=255 THEN 1020
UF 1030 IF A=155 THEN 130
MP 1040 IF A=65 THEN GOSUB 1220
AO 1050 RETURN
XL 1060 REM RAND SUBROUTINE
NU 1070 IF LEN(SUB$)=0 THEN 130
TY 1080 START=RAND+1
BG 1090 RAND=USR(ML,ADR(FILE$),LEN(FILE$)
   ,ADR(SUB$),LEN(SUB$),START)
YV 1100 IF RAND=0 THEN POP :? "■":? :? "I
   NVALID NAME OR LIST ENDED":FOR I=1 TO
   200:NEXT I:GOTO 130
MS 1110 START=RAND
PX 1120 RAND=USR(ML,ADR(FILE$),LEN(FILE$)
   ,ADR(EOL$),LEN(EOL$),START)
JE 1130 IF RAND=0 THEN 1100
AN 1140 RETURN
KW 1150 REM SEARCH SUBROUTINE
CX 1160 START=START-10:IF START<0 THEN ST
   ART=1
RT 1170 X=0:X=USR(ML,ADR(FILE$),LEN(FILE$
   ),ADR(EOL$),LEN(EOL$),START)
JE 1180 IF X=RAND THEN 1160
GR 1190 START=X
AD 1200 RETURN
BU 1210 REM PRINTER SUBROUTINE
TP 1220 TRAP 1230:CLOSE #4:OPEN #4,8,0,"P
   :":GOTO 1240
SX 1230 ? "■":? :? "I/O ERROR #";PEEK(195
   ):TRAP 40000:CLOSE #4:GOTO 130
IM 1240 REM
EU 1250 IF A=65 THEN PRINT #4;CHR$(27);"1
   ";CHR$(10);FILE$(START,RAND-1):CLOSE #
   4:RETURN
OY 1260 GOTO 130
WN 1270 REM LOAD MENU
QY 1280 TRAP 1290:? "■":CLOSE #2:OPEN #2,
   6,0,"D:*.*":FOR X=1 TO 10000:GET #2,A:
   ? CHR$(A);:NEXT X
VV 1290 CLOSE #2:? MSG1$:TRAP 40000
VU 1300 REM LOAD ROUTINE
KT 1310 POKE 752,0:? :? "DEVICE.FILENAME
```

```
    TO LOAD":INPUT FILENAME$
YW  1320 IF LEN(FILENAME$)=0 THEN 130
JF  1330 TRAP 1360:CLOSE #2:OPEN #2,4,0,FI
    LENAME$:LET READ=1:X=32:MAXLEN=FILELEN
    :SADR=ADR(FILE$):GOSUB 1370
CU  1340 CLOSE #2:FILE$(TRUELEN)=CHR$(155)
    :TRAP 40000:GOTO 130
IZ  1350 ? "■":POSITION 5,10:? "I/O ERROR
    #";PEEK(195):CLOSE #2:TRAP 40000
PA  1360 GOTO 130
DS  1370 REM I/O LOAD & SAVE
IE  1380 ICCOM=834:ICBADR=836:ICBLEN=840:I
    CSTAT=835
WT  1390 H=INT(SADR/256):L=SADR-H*256:POKE
     ICBADR+X,L:POKE ICBADR+X+1,H
BE  1400 H=INT(MAXLEN/256):L=MAXLEN-H*256:
    POKE ICBLEN+X,L:POKE ICBLEN+X+1,H
OF  1410 POKE ICCOM+X,11-4*READ:A=USR(ADR(
    IO$),X)
WJ  1420 TRUELEN=PEEK(ICBLEN+X)+256*PEEK(I
    CBLEN+X+1)
AQ  1430 RETURN
```

LISTING 3

```
PD  10 REM MIGHTY LISTER, HELPER FILE
MW  20 REM BY PHILIP BATE, Ph.D.
GD  30 REM (c) 1985,1988 ANTIC PUBLISHING
YJ  35 REM (CREATES LINES 70-83 FOR LISTER
    .BAS)
EV  40 REM (LINES 10-250 MAY BE USED WITH
    OTHER BASIC LOADERS IN THIS ISSUE.
IJ  50 REM CHANGE LINE 70 AS NECESSARY.)
PR  60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
    EEK(10592):POKE 10592,255
WO  70 FN$="D:LINES.LST":REM THIS IS THE N
    AME OF THE DISK FILE TO BE CREATED
RD  80 ? "■Disk or ■assette?";:POKE 764,25
    5
PY  90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
    58) THEN 90
TH  100 IF PEEK(764)=18 THEN FN$="C:"
VB  110 POKE 764,255:GRAPHICS 0:? "      AN
    TIC'S GENERIC BASIC LOADER"
MY  120 ? ,"BY CHARLES JACKSON"
KB  130 POKE 10592,DPL:TRAP 200
PU  140 ? :? :? "Creating ";FN$:? "...plea
    se stand by."
LW  150 RESTORE :READ LN:LM=LN:DIM A$(LN):
    C=1
BQ  160 AR$="":READ AR$
YC  170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
    2,255
DM  180 LM=LM-1:POSITION 10,10:? "(Countdo
    wn...T-";INT(LM/10);")          "
BK  190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
    1:NEXT X:GOTO 160
MM  200 IF PEEK(195)=5 THEN ? :? :? "■TOO
    MANY DATA LINES!":? "CANNOT CREATE FIL
    E!":END
CM  210 IF C<LN+1 THEN ? :? "■TOO FEW DATA
     LINES!":? "CANNOT CREATE FILE!":END
UQ  220 IF FN$="C:" THEN ? :? " Prepare ca
    ssette, press [RETURN]"
AR  230 OPEN #1,8,0,FN$
PV  240 POKE 766,1:? #1;A$;:POKE 766,0
AL  250 CLOSE #1:GRAPHICS 0:? "■COMPLETED■
    "
IQ  1000 DATA 336
BD  1010 DATA 0550480320730790360610341041
    04104170076086228034155056048032082065
    078068036040049044056054041
JM  1020 DATA 0610341690001332121332131042
    01005240018141000004162000236000004208
    001096104104232169000240243
UL  1030 DATA 1041410050041041410040041041
    41003004104024109004004141002004173003
    004109005004141003004104133
DE  1040 DATA 2041041332031041041410010041
    04133206104024109004004133205165206109
    0050004133206034155056050032
ES  1050 DATA 0820650780680360400560550440
    490550500041061034165205056233001133205
    165206233000133206162000160
DD  1060 DATA 0001772052092032400371730020
    04056229205141000004173003004229206013
    000004208001096165205024105
XC  1070 DATA 0011332051652061050001332061
    690002402092322360010042080004169000240
    054200177205209203240037173
KT  1080 DATA 0020040562292051410000040341
    55056051032082065078068036040049055051
    044050054048041061034173003
YE  1090 DATA 0042292060130000042080010961
    65205024105001133205165206105000133206
    169000240042232236001004240
HV  1100 DATA 0041690002402021730020040562
    29205141000004173003004229206013000004
    144030240028165205056237004
KI  1110 DATA 0041332121652062370050041332
    13165212024105001133212165213105000133
    213096034155
```

fix the roof, or shop for grandma's birthday?

JOB JAR ATARI

Article on page 22

LISTING 1

Don't type tne TYPO II Codes!

```
BK  10 REM JOB JAR
JH  20 REM BY JEFFREY A. SUMMERS, MD
QH  30 REM (c)1988, ANTIC PUBLISHING
QY  40 BRK=PEEK(53279)<>5
GU  99 GOTO 10000
XF  100 CLOSE #5:OPEN #5,4,0,"K:":FOR ZZZ=
    1 TO MCH:? "_";:NEXT ZZZ:FOR ZZZ=1 TO
    MCH:? "■";:NEXT ZZZ
LX  105 COUNT=1
QD  110 GET #5,X:IF X=155 THEN 150
HC  120 IF X=126 THEN 140
TV  130 ? CHR$(X);:FIELD$(COUNT)=CHR$(X):C
    OUNT=COUNT+1:IF COUNT<=MCH THEN 110
NS  131 GOTO 150
KP  140 IF COUNT=1 THEN 110
TD  141 COUNT=COUNT-1:? CHR$(X);:GOTO 110
FA  150 COUNT=COUNT-1:CLOSE #5:RETURN
NN  1000 REM GET PERSON
TU  1010 POSITION 6,10:PRINT "Whose jar? "
    ;:MCH=8:GOSUB 100
GO  1020 IF COUNT=0 THEN 1010
UK  1030 NAME$=FIELD$(1,COUNT):FNAME$="D:"
    :FNAME$(3)=NAME$:FNAME$(LEN(FNAME$)+1)
    =".JAR"
LU  1040 TRAP 1100
YP  1050 CLOSE #1:OPEN #1,4,0,FNAME$
TE  1060 TRAP 2010:COUNT=0
XX  1070 INPUT #1,DOE$:INPUT #1,DOC$:INPUT
     #1,P1:INPUT #1,P2:INPUT #1,SIZE$:INPU
    T #1,DESCR$
LH  1075 ADOE$(COUNT*6+1,COUNT*6+6)=DOE$:A
    DOC$(COUNT*6+1,COUNT*6+6)=DOC$:SPRIOR(
    COUNT+1)=P1:EPRIOR(COUNT+1)=P2
SE  1076 ASIZE$(COUNT+1,COUNT+1)=SIZE$:ADE
    SCR$(COUNT*37+1,COUNT*37+37)=DESCR$:CO
    UNT=COUNT+1:GOTO 1070
NM  1100 TRAP 1200:CLOSE #1
GD  1110 CLOSE #1:OPEN #1,8,0,FNAME$:COUNT
    =0
PD  1115 ? :? :? "New person"
YQ  1116 FOR I=1 TO 500:NEXT I
NU  1120 GOTO 2010
ZG  1200 ? :? "Cannot open file.":? "Pleas
    e check device"
ZZ  1210 FOR I=1 TO 500:NEXT I:GOTO 30000
IZ  1500 POKE 77,0:IF BRK THEN POKE 16,112
    :POKE 53774,112
```

continued on next page

```
AM 1510 RETURN
QD 2000 REM GET TODAY'S DATE
MF 2010 CLOSE #1:NJOBS=COUNT:? "■     job jar              ";NAME$
HF 2020 POSITION 6,10:? "Today's date? MMDDYY"
XB 2030 POSITION 10,12:MCH=6:GOSUB 100
TA 2040 IF COUNT<>6 THEN 2020
NT 2041 LET DOE$=FIELD$(1,COUNT)
YX 3010 REM MAIN MENU
IS 3030 ? "■     job jar                  ";NAME$
DH 3040 POSITION 12,8:? "Add a Job":POSITION 12,10:? "List jobs"
VW 3050 POSITION 12,12:? "Delete a Job":POSITION 12,14:? "Exit"
DO 3060 POSITION 0,0:? " ";:CLOSE #5:OPEN #5,4,0,"K:":GET #5,X:CLOSE #5
HS 3070 IF X=65 THEN 4010:REM ADD
KT 3080 IF X=68 THEN 5010:REM DELETE
NU 3090 IF X=69 THEN 6010:REM EXIT
OY 3100 IF X=76 THEN 7010:REM LIST
QR 3110 GOTO 3060
MG 4000 REM ADD JOB
IN 4010 ? "■     job jar                  ";NAME$
HS 4020 POSITION 6,6:? "Completion date (MMDDYY)"
FF 4030 POSITION 12,7:MCH=6:GOSUB 100
VN 4035 IF COUNT<>6 THEN 4020
GW 4036 LET DOC$=FIELD$
YO 4040 POSITION 6,8:? "Enter starting priority":POSITION 16,9:MCH=1:GOSUB 100
JT 4045 TRAP 4040:SPRIOR=VAL(FIELD$(1,1))
MW 4050 POSITION 6,10:? "Enter ending priority":POSITION 16,11:MCH=1:GOSUB 100
BT 4055 TRAP 4050:EPRIOR=VAL(FIELD$(1,1))
MX 4060 POSITION 6,12:? "Enter size of job (S/M/L)":POSITION 16,13:MCH=1:GOSUB 100
HW 4065 SIZE$=FIELD$(1,1):IF SIZE$<>"S" AND SIZE$<>"M" AND SIZE$<>"L" THEN 4060
MX 4070 POSITION 6,14:? "Enter job description":MCH=37:POSITION 2,15:GOSUB 100
PZ 4074 IF COUNT<1 THEN 4070
NQ 4075 DESCR$=FIELD$(1,COUNT)
RP 4080 POSITION 6,16:? "Is this O.K. (Y/N) ";:MCH=1:GOSUB 100
QI 4090 IF FIELD$(1,1)<>"Y" AND FIELD$(1,1)<>"N" THEN 4080
AD 4100 IF FIELD$(1,1)="N" THEN 3030
GZ 4110 ADOE$(NJOBS*6+1,NJOBS*6+6)=DOE$:ADOC$(NJOBS*6+1,NJOBS*6+6)=DOC$:SPRIOR(NJOBS+1)=SPRIOR
LZ 4120 EPRIOR(NJOBS+1)=EPRIOR:ASIZE$(NJOBS+1)=SIZE$:ADESCR$(37*NJOBS+1,37*NJOBS+37)=DESCR$:NJOBS=NJOBS+1
ZS 4130 CLOSE #1:OPEN #1,9,0,FNAME$:? #1;DOE$:? #1;DOC$:? #1;SPRIOR
XM 4140 ? #1;EPRIOR:? #1;SIZE$:? #1;DESCR$:CLOSE #1
PR 4150 GOTO 3030
KB 5000 REM DELETE JOB
IO 5010 ? "■     job jar                  ";NAME$
BC 5020 POSITION 3,8:? "Enter description of job to delete"
JO 5030 ? :MCH=37:GOSUB 100
LD 5035 IF COUNT=0 THEN 3030
TO 5040 FOR I=0 TO NJOBS-1:IF ADESCR$(37*I+1,37*I+COUNT)=FIELD$(1,COUNT) THEN 5070
FI 5050 NEXT I
DT 5060 ? :? "No matching entry":? "Press RETURN":CLOSE #5:OPEN #5,4,0,"K:":GET #5,X:CLOSE #5
PX 5061 GOTO 3030
HZ 5070 DCHANGE=1:? :? "          deleting..."
AU 5080 POP :ADOE$(6*I+1)=ADOE$(6*I+7)
YL 5090 ADOC$(6*I+1)=ADOC$(6*I+7)
JX 5100 FOR J=I+1 TO NJOBS:SPRIOR(J)=SPRIOR(J+1):EPRIOR(J)=EPRIOR(J+1):NEXT J
QE 5110 ASIZE$(I+1)=ASIZE$(I+2)
AJ 5120 ADESCR$(37*I+1)=ADESCR$(37*I+38)
HC 5130 NJOBS=NJOBS-1:GOTO 3030
CP 6000 REM EXIT
NZ 6010 IF DCHANGE=0 THEN 30000
MN 6015 ADESCR$(3800)=" "
OC 6020 CLOSE #1:OPEN #1,8,0,FNAME$:FOR I=1 TO NJOBS:? #1;ADOE$(6*(I-1)+1,6*I):? #1;ADOC$(6*(I-1)+1,6*I)
NH 6030 ? #1;SPRIOR(I):? #1;EPRIOR(I):? #1;ASIZE$(I,I):? #1;ADESCR$(37*(I-1)+1,37*I)
FG 6040 NEXT I
EI 6050 CLOSE #1:GOTO 30000
ET 7000 REM LIST JOBS
IQ 7010 ? "■     job jar                  ";NAME$
MK 7020 POSITION 6,6:? "List by":POSITION 8,8:? "Size":POSITION 8,9:? "Priority"
ED 7030 POSITION 8,10:? "Due date":POSITION 8,11:? "Entry date":POSITION 0,0:? " ";
LI 7040 CLOSE #5:OPEN #5,4,0,"K:":GET #5,X:CLOSE #5:IF X<>68 AND X<>69 AND X<>80 AND X<>83 THEN 7040
PM 7045 ALGO=X
TW 7046 IF ALGO=83 THEN FILTER=65:GOTO 7100
JC 7050 ? "■     job jar                  ";NAME$
GL 7060 POSITION 6,6:? "List sizes":POSITION 8,8:? "Small":POSITION 8,10:? "Medium"
OQ 7070 POSITION 8,12:? "Large":POSITION 8,14:? "All":POSITION 0,0:? " ";
GP 7080 CLOSE #5:OPEN #5,4,0,"K:":GET #5,X:CLOSE #5:IF X<>65 AND X<>76 AND X<>77 AND X<>83 THEN 7080
NP 7090 FILTER=X
IP 7100 ? "■     job jar                  ";NAME$
IJ 7110 POSITION 8,8:? "Output to":POSITION 8,10:? "Screen":POSITION 8,12:? "Printer"
AI 7120 POSITION 0,0:? " ";:CLOSE #5:OPEN #5,4,0,"K:":GET #5,X:CLOSE #5:IF X<>80 AND X<>83 THEN 7120
EL 7130 DEVICE=X
DY 8000 IF DEVICE=80 THEN TRAP 8070:CLOSE #4:OPEN #4,8,0,"P:":GOTO 8010
JY 8010 TRAP 40000:IF DEVICE=83 THEN CLOSE #4:OPEN #4,8,0,"E:":POKE 710,2:GOSUB 1500
UT 8020 IF ALGO=68 THEN 8100
WI 8030 IF ALGO=69 THEN 8200
TF 8040 IF ALGO=80 THEN 8300
VY 8050 IF ALGO=83 THEN 8400
SI 8060 STOP :REM SHOULDN'T GET HERE
IO 8070 ? :? :? "■PRINTER OFFLINE■";:FOR X=1 TO 200:NEXT X:? "■":GOTO 7110
SG 8100 FOR I=1 TO NJOBS:ORDER(I)=I:NEXT I
EL 8110 FOR I=0 TO NJOBS-1:IF NJOBS-1<0 THEN 8121
JL 8112 RDATE$(6*I+1)=ADOC$(6*I+5,6*I+6):RDATE$(6*I+3)=ADOC$(6*I+1,6*I+2)
JH 8120 RDATE$(6*I+5)=ADOC$(6*I+3,6*I+4)
FI 8121 NEXT I
LO 8130 FOR I=0 TO NJOBS-1:IF NJOBS-1<0 THEN 8170
YS 8135 CHANGE=0:FOR J=1 TO NJOBS-1-I:IF NJOBS-1-I<1 THEN 8160
YQ 8140 IF VAL(RDATE$(6*ORDER(J)-5,6*ORDER(J)))<=VAL(RDATE$(6*ORDER(J+1)-5,6*ORDER(J+1))) THEN 8160
YK 8150 T=ORDER(J):ORDER(J)=ORDER(J+1):ORDER(J+1)=T:CHANGE=1
XO 8160 NEXT J:IF CHANGE=0 THEN POP :GOTO 9000
OU 8170 NEXT I:GOTO 9000
SI 8200 FOR I=1 TO NJOBS:ORDER(I)=I:NEXT I
GF 8210 FOR I=0 TO NJOBS-1:IF NJOBS-1<0 THEN 8221
PL 8211 RDATE$(6*I+1)=ADOE$(6*I+5,6*I+6):RDATE$(6*I+3)=ADOE$(6*I+1,6*I+2)
LD 8220 RDATE$(6*I+5)=ADOE$(6*I+3,6*I+4)
FK 8221 NEXT I
NI 8230 FOR I=0 TO NJOBS-1:IF NJOBS-1<0 THEN 8270
AZ 8235 CHANGE=0:FOR J=1 TO NJOBS-1-I:IF NJOBS-1-I<1 THEN 8260
YS 8240 IF VAL(RDATE$(6*ORDER(J)-5,6*ORDER(J)))<=VAL(RDATE$(6*ORDER(J+1)-5,6*ORDER(J+1))) THEN 8160
YM 8250 T=ORDER(J):ORDER(J)=ORDER(J+1):ORDER(J+1)=T:CHANGE=1
```

```
XQ 8260 NEXT J:IF CHANGE=0 THEN POP :GOTO
      9000
OW 8270 NEXT I:GOTO 9000
OR 8300 FOR I=1 TO NJOBS:ORDER(I)=I:NEXT
     I:TDAY=365*VAL(DOE$(5,6))+MLEN(VAL(DOE
     $(1,2)))+VAL(DOE$(3,4))
LK 8310 FOR I=0 TO NJOBS-1:IF NJOBS-1<0 T
     HEN 8350
DY 8315 TC=365*VAL(ADOC$(6*I+5,6*I+6))+ML
     EN(VAL(ADOC$(6*I+1,6*I+2)))+VAL(ADOC$(
     6*I+3,6*I+4))
OV 8320 TE=365*VAL(ADOE$(6*I+5,6*I+6))+ML
     EN(VAL(ADOE$(6*I+1,6*I+2)))+VAL(ADOE$(
     6*I+3,6*I+4))
KQ 8330 IF TDAY>TC THEN CPRIOR(I+1)=EPRIO
     R(I+1):GOTO 8350
DU 8340 CPRIOR(I+1)=SPRIOR(I+1)+(EPRIOR(I
     +1)-SPRIOR(I+1))*((TDAY-TE)/(TC-TE))
FR 8350 NEXT I
LF 8360 FOR I=1 TO NJOBS:IF NJOBS<1 THEN
     8395
AN 8365 CHANGE=0:FOR J=1 TO NJOBS-I+1:IF
     NJOBS-I+1<1 THEN 8390
CB 8370 IF CPRIOR(ORDER(J))>=CPRIOR(ORDER
     (J+1)) THEN 8390
YX 8380 T=ORDER(J):ORDER(J)=ORDER(J+1):OR
     DER(J+1)=T:CHANGE=1
YB 8390 NEXT J:IF CHANGE=0 THEN POP :GOTO
      9000
PY 8395 NEXT I:GOTO 9000
SM 8400 FOR I=1 TO NJOBS:ORDER(I)=I:NEXT
     I
ZL 8410 FOR I=1 TO NJOBS:IF NJOBS<1 THEN
     8460
QJ 8415 CHANGE=0:FOR J=1 TO NJOBS-I:IF NJ
     OBS-I<1 THEN 8450
KH 8420 IF ASIZE$(ORDER(J),ORDER(J))<=ASI
     ZE$(ORDER(J+1),ORDER(J+1)) THEN 8450
YK 8430 T=ORDER(J):ORDER(J)=ORDER(J+1):OR
     DER(J+1)=T:CHANGE=1
XR 8450 NEXT J:IF CHANGE=0 THEN POP :GOTO
      9000
FW 8460 NEXT I
RK 9000 FOR I=1 TO NJOBS:IF NJOBS<1 THEN
     ? #4;"No Jobs":GOTO 9070
PV 9002 IF FILTER<>65 AND FILTER<>ASC(ASI
     ZE$(ORDER(I),ORDER(I))) THEN 9070
TO 9005 ? #4;ADESCR$(ORDER(I)*37-36,ORDER
     (I)*37)
KT 9010 ? #4;"  Due date: ";ADOC$(ORDER(I
     )*6-5,ORDER(I)*6)
WJ 9020 ? #4;"  Date of entry: ";ADOE$(OR
     DER(I)*6-5,ORDER(I)*6)
JG 9030 ? #4;"  Priority (S/E): ";SPRIOR(
     ORDER(I));"/";EPRIOR(ORDER(I))
CI 9040 IF ALGO=80 THEN ? #4;"  Current P
     riority: ";INT(CPRIOR(ORDER(I))*1000+0
     .5)/1000
BE 9050 ? #4;"  Size: ";ASIZE$(ORDER(I),O
     RDER(I))
ZP 9060 ? #4
YK 9070 NEXT I:CLOSE #4
OZ 9075 IF DEVICE=80 THEN 3030
JE 9080 ? "Press RETURN":POSITION 0,0:CLO
     SE #5:OPEN #5,4,0,"K:":GET #5,X:CLOSE
     #5
ME 9090 POKE DLIST+3,71:POKE DLIST+6,6
PH 9100 GOTO 3030
RW 9999 STOP
YG 10000 DIM NAME$(8),FNAME$(14),DOE$(6),
     DOC$(6),SPRIOR(100),EPRIOR(100),SIZE$(
     1),DESCR$(38),FIELD$(100)
FN 10010 DIM ADOE$(600),ADOC$(600),ASIZE$
     (100),ADESCR$(3800),ORDER(100),RDATE$(
     600),CPRIOR(100)
AF 10011 DIM MLEN(12):FOR I=1 TO 12:READ
     X:MLEN(I)=X:NEXT I
VG 10012 DATA 0,31,59,90,120,151,181,212,
     243,273,304,334
CD 10020 GRAPHICS 0:POKE 710,2:DLIST=PEEK
     (560)+256*PEEK(561):POKE DLIST+3,71:PO
     KE DLIST+6,6:CHANGE=0:DCHANGE=0
FJ 10021 ADESCR$(1)=" ":ADESCR$(3800)=" "
     :ADESCR$(2)=ADESCR$(1):ADOE$=ADESCR$:A
     DOC$=ADESCR$:ASIZE$=ADESCR$
ZI 10022 FIELD$=ADESCR$:DESCR$=ADESCR$:GO
     SUB 1500
UO 10030 ? "     job jar"
SW 10040 GOTO 1010
YE 30000 GRAPHICS 0:END
```

from screen to Okimate 10, in nine colors

JOYSTICK OKI DRAW

Article on page 28

LISTING 1

Don't type the TYPO II Codes!

```
RU 10 REM JOYSTICK COLOR DRAWING
HH 20 REM BY DENIS SCHAFFER
QH 30 REM (c)1988, ANTIC PUBLISHING
BW 40 SIDE=0
MV 45 GOTO 300
EI 50 PLOT X,Y:IF FLAG=1 OR MODE$="1" THE
     N DRAWTO X,Y+W
ZW 60 RETURN
LR 70 Y=0:GOTO 90
JY 80 IF FLAG=-1 THEN 120
SP 90 TRAP 70:COLOR 0:GOSUB 50:FOR D=1 TO
      DELAY:NEXT D:COLOR C:GOSUB 50
SZ 100 IF STRIG(0)=0 THEN COLOR 0:GOSUB 5
     0:COLOR C
PC 110 GOSUB 210:GOTO 80
NH 120 IF FIRST=1 THEN FIRST=0:LOCATE X,Y
     ,TEMP
PS 130 DX=X:DY=Y
FB 140 IF FLAG=1 THEN 80
RT 150 GOSUB 210
DG 160 IF (DX=X AND DY=Y) THEN 140
AO 170 TX=X:TY=Y:X=DX:Y=DY
LL 180 COLOR TEMP:GOSUB 50:X=TX:Y=TY:LOCA
     TE X,Y,TEMP:COLOR 0:GOSUB 50
SY 190 FOR D=1 TO DELAY:NEXT D:COLOR C:GO
     SUB 50
RV 200 GOTO 80
BF 210 S=STICK(0):POKE 77,0
RJ 220 X=X+(S=5 OR S=6 OR S=7)-(S=9 OR S=
     10 OR S=11)
FT 230 Y=Y+(W+1)*((S=5 OR S=9 OR S=13)-(S
     =6 OR S=10 OR S=14))
BH 240 IF X>78 THEN X=0
AU 250 IF X<0 THEN X=78
XK 260 IF Y+W>191 THEN Y=0
WX 270 IF Y<0 THEN Y=191-W
VN 280 IF PEEK(764)<>255 THEN GOSUB 630
ZQ 290 RETURN
HA 300 FLAG=1:DELAY=0:W=3:DIM Y$(474),R$(
     474),B$(474),DRAWFIL$(14),TEMPFIL$(12)
     ,POW(6),MODE$(1),BL$(6),PT$(6)
CO 310 TEMPFIL$="":DRAWFIL$="D:DRAWFILE"
VA 320 GOSUB 920
AX 330 FOR T=0 TO 6:POW(T)=2^T:NEXT T
IR 340 FOR T=1 TO 6:BL$(T)=CHR$(0):PT$(T)
     =CHR$(127):NEXT T
IA 350 C=1:GRAPHICS 10
TM 360 POKE 705,66:POKE 706,38:POKE 707,2
     18:POKE 708,195:POKE 709,130:POKE 710,
     85:POKE 711,13:POKE 712,3
MC 370 GOSUB 880:X=39:Y=96:COLOR C:GOTO 8
     0
XW 380 FOR ROW=0 TO 188 STEP 4:FOR COL=0
     TO 78:LOCATE COL,ROW,K:T=COL*6+1:Y$(T)
     =PT$:R$(T)=PT$:B$(T)=PT$
WD 390 IF K=1 OR K=5 OR K=6 OR K=7 THEN Y
     $(T)=BL$
KL 400 IF K=3 OR K=4 OR K=5 OR K=7 THEN R
     $(T)=BL$
JF 410 IF K=1 OR K=2 OR K=3 OR K=7 THEN B
```

continued on next page

```
   $(T)=BL$
EP 420 POKE 77,0:NEXT COL
KI 430 ? #3;CHR$(153);Y$
YH 440 ? #3;R$
NO 450 ? #3;B$;CHR$(155):NEXT ROW:? #3;CH
   R$(145)
BK 460 TRAP 470:CLOSE #3
ZO 470 RETURN
EB 480 TRAP 460:LPRINT "":OPEN #3,8,0,"P:
   ":? #3;CHR$(27);CHR$(37):IF MODE$="1"
   THEN 380
CZ 490 COUNT=6:FOR ROW=0 TO 189 STEP 7:FO
   R COL=0 TO 79:L=127:R=127:B=127:T=COL*
   3+1
QZ 500 IF ROW=189 THEN COUNT=2:L=7:R=7:B=
   7
GJ 510 FOR SCAN=0 TO COUNT:POKE 77,0
JP 520 LOCATE COL,ROW+SCAN,K
AG 530 IF K=1 OR K=5 OR K=6 OR K=7 THEN L
   =L-POW(SCAN)
RN 540 IF K=3 OR K=4 OR K=5 OR K=7 THEN R
   =R-POW(SCAN)
RR 550 IF K=1 OR K=2 OR K=3 OR K=7 THEN B
   =B-POW(SCAN)
VT 560 NEXT SCAN:Y$(T)=CHR$(L):R$(T)=CHR$
   (R):B$(T)=CHR$(B):Y$(T+1)=Y$(T):R$(T+1
   )=R$(T):B$(T+1)=B$(T)
ZM 570 Y$(T+2)=Y$(T):R$(T+2)=R$(T):B$(T+2
   )=B$(T)
UQ 580 NEXT COL
YL 590 IF SIDE=1 THEN 612
RO 595 ? #3;CHR$(153);Y$(1,237)
HH 600 ? #3;R$(1,237)
SA 610 ? #3;B$(1,237);CHR$(155):GOTO 620
PC 612 ? #3;CHR$(153);Y$(1,237);BL$;Y$(1,
   237)
WZ 614 ? #3;R$(1,237);BL$;R$(1,237)
KA 618 ? #3;B$(1,237);BL$;B$(1,237);CHR$(
   155)
NJ 620 NEXT ROW:? #3;CHR$(145):GOTO 460
SU 630 PK=PEEK(764):POKE 764,255
MI 640 IF PK=14 AND MODE$="2" THEN 800
UZ 650 IF PK=6 AND MODE$="2" THEN 820
WI 660 IF PK=78 AND MODE$="2" THEN W=0:GO
   TO 880
JO 670 IF PK=70 AND MODE$="2" THEN W=50:G
   OTO 880
SX 680 IF PK=33 THEN 840
XS 690 IF PK=44 THEN 890
JA 700 IF PK=55 THEN DELAY=DELAY-1:GOTO 8
   60
PZ 710 IF PK=54 THEN DELAY=DELAY+1:RETURN
UH 720 IF PK=119 THEN DELAY=0
WS 730 IF PK=118 THEN DELAY=50
HW 740 IF PK=39 THEN FLAG=-FLAG:FIRST=1:R
   ETURN
XE 760 IF PK=62 THEN GOSUB 1120
QZ 770 IF PK=0 THEN GOSUB 1170
CK 780 IF PK=10 THEN GOSUB 480
AN 790 POKE 77,0:RETURN
OD 800 W=W-1:IF W<0 THEN W=0
RR 810 GOTO 880
VU 820 W=W+1:IF W>50 THEN W=50
RV 830 GOTO 880
JF 840 C=C+1:IF C=9 THEN C=1
ZO 850 RETURN
BQ 860 IF DELAY<0 THEN DELAY=0
ZS 870 RETURN
DK 880 COLOR 0:PLOT 79,0:DRAWTO 79,50:COL
   OR 7:PLOT 79,0:DRAWTO 79,W:RETURN
PG 890 IF PEEK(764)=255 THEN 890
PV 900 IF PEEK(764)=44 THEN POP :POKE 764
   ,255:GOTO 350
XL 910 POKE 764,255:RETURN
MU 920 GRAPHICS 0:POKE 710,0:POSITION 16,
   0:? "JOYSTICK":POSITION 15,1:? "COLOR
   DRAW"
SR 930 POSITION 14,2:? "INSTRUCTIONS":? "
   "
YU 940 ? "Spacebar - Changes the color of
    cursor";
HN 950 ? "Reverse Video - Draw/Non-draw.
   Holding    down the trigger in draw mo
   de         causes cursor to erase"
HS 960 ? "S - Saves the screen to the dis
   k"
ZA 970 ? "L - Loads a file from the disk"
TC 980 ? "P - Prints a picture on a 'Okim
   ate'"
VE 990 ? "> - Speeds up cursor Shift> se
   ts         cursor to maximum speed"
YU 1000 ? "< - Opposite of >"
GJ 1010 ? "+ - In mode 2, increases size
   of         cursor. Shift+ sets size
   to max."
AI 1020 ? "    Size is shown at upper rig
   ht of      screen"
BR 1030 ? "- - Opposite of +"
QZ 1040 ? "TAB - Press twice to erase the
    screen  "
HA 1050 ? "Do you want to draw using MODE
    1 48x79or 2 192x79 ";:INPUT MODE$
LK 1060 IF MODE$<>"1" AND MODE$<>"2" THEN
    1050
IM 1070 GRAPHICS 0:POKE 710,0
PI 1080 ? "What is the name of the file y
   ou want to save or load. Default is 'D
   RAWFILE'":INPUT TEMPFIL$
QY 1090 IF LEN(TEMPFIL$)=0 THEN 1110
UP 1100 DRAWFIL$(3)=TEMPFIL$
AE 1110 RETURN
TR 1120 TRAP 1220:CLOSE #4:OPEN #4,8,0,DR
   AWFIL$:IO=896:PUT #4,VAL(MODE$):POKE I
   O+2,11
RY 1130 GOTO 1190
JA 1170 TRAP 1220:CLOSE #4:OPEN #4,4,0,DR
   AWFIL$:GET #4,T:MODE$=STR$(T):IO=896:P
   OKE IO+2,7
FK 1190 POKE IO+4,PEEK(88):POKE IO+5,PEEK
   (89):POKE IO+8,0:POKE IO+9,30
TX 1200 JNK=USR(ADR("hhh*LVd"),64)
RY 1220 TRAP 1230:CLOSE #4
AM 1230 RETURN
```

they don't seem hostile, but . . .

SAUCERIAN SHOOTDOWN

Article on page 30

LISTING 1

Don't type the TYPO II Codes!

```
IR 10 REM SAUCERIAN (SCREENFREEZE @ 686)
KB 15 REM BY JIM CATALANO
QG 20 REM (c)1988, ANTIC PUBLISHING
YK 30 GRAPHICS 0:POKE 710,0:POKE 752,1:DL
   I=PEEK(560)+PEEK(561)*256+4:POKE DLI-1
   ,66
UX 31 POKE DLI+6,7:POKE DLI+7,7:POKE DLI+
   11,6:POKE DLI+12,6:POKE DLI+17,6:POKE
   DLI+18,6
QZ 32 POSITION 7,3:? "== P R E S E N T I
   N G ==":POSITION 1,5:? "S A U C E R I
   A N"
XO 33 POSITION 7,7:? "DESIGNED AND PROGRA
   MMED BY":POSITION 2,9:? "james   catala
   no"
PF 34 POSITION 14,12:? "(c)1988":POSITION
    2,14:? "antic  magazine":? :? "
   Press Trigger to Begin"
BS 35 IF STRIG(0) THEN 35
HU 39 REM INITIALIZATION
BQ 40 PMMODE=1:GRMODE=23:GOSUB 20050
AO 45 POKE 708,50:POKE 709,52:POKE 710,54
   :POKE 712,136:UFOAX=INT(RND(0)*248)+1:
   UFOAY=INT(RND(0)*140)+1
```

```
EV  50 UFOBX=INT(RND(0)*248)+1:UFOBY=INT(R
    ND(0)*140)+1:UFOAMOV=INT(RND(0)*8)+1:U
    FOBMOV=INT(RND(0)*8)+1
GJ  55 BASEX=122:BASEY=190:MISX=BASEX:MISY
    =173:MISL=50:HIT=0:MIS=0:BONUS=0:SCR=0
EY  100 REM LANDSCAPE ROUTINE
RB  105 REM
AW  110 GOSUB 130:FOR Y=60 TO 95:COLOR 3:P
    LOT 0,Y:DRAWTO 156,Y:NEXT Y:COLOR 2:RE
    STORE 113
GF  111 READ L:IF L=-1 THEN FOR X=0 TO 156
     STEP 14:PLOT 79,61:DRAWTO X,95:NEXT X
    :GOTO 114
NM  112 PLOT 0,L:DRAWTO 156,L:PLOT 0,L:DRA
    WTO 79,61:DRAWTO 156,L:GOTO 111
HQ  113 DATA 61,63,66,70,75,81,88,-1
VL  114 GOSUB 10005
PT  115 GOTO 505
GH  125 REM MOUNTAIN ROUTINE
QN  130 COLOR 1:Y=40:X=-1:GOSUB 150
VE  135 COLOR 2:Y=55:X=-1:GOSUB 150
ZU  145 RETURN
JZ  150 FOR T=1 TO 157
JW  155 M=INT(RND(0)*2)+1
CU  160 IF M=1 THEN Y=Y-1
CF  165 IF M=2 THEN Y=Y+1
DI  166 IF Y<35 THEN Y=Y+1
IF  167 IF Y>59 THEN Y=Y-1
XM  170 X=X+1
IQ  175 PLOT X,Y:DRAWTO X,60:NEXT T:RETURN
YD  500 REM UFO 'A' CONTROL
MD  505 POKE 53278,0:UFOADIR=INT(RND(0)*15
    )+1:IF UFOADIR<3 THEN 515
NW  510 GOTO 520
PM  515 UFOAMOV=INT(RND(0)*8)+1
BW  520 IF UFOAMOV=1 THEN UFOAY=UFOAY-10
WJ  525 IF UFOAMOV=2 THEN UFOAX=UFOAX+10:U
    FOAY=UFOAY-10
YG  530 IF UFOAMOV=3 THEN UFOAX=UFOAX+10
TX  535 IF UFOAMOV=4 THEN UFOAX=UFOAX+10:U
    FOAY=UFOAY+10
BW  540 IF UFOAMOV=5 THEN UFOAY=UFOAY+10
XV  545 IF UFOAMOV=6 THEN UFOAX=UFOAX-10:U
    FOAY=UFOAY+10
DM  550 IF UFOAMOV=7 THEN UFOAX=UFOAX-10
CX  555 IF UFOAMOV=8 THEN UFOAX=UFOAX-10:U
    FOAY=UFOAY-10
XI  560 IF UFOAX<15 THEN UFOAX=15:UFOAMOV=
    3
HK  565 IF UFOAX>208 THEN UFOAX=208:UFOAMO
    V=7
TK  570 IF UFOAY<10 THEN UFOAY=10:UFOAMOV=
    5
QI  575 IF UFOAY>140 THEN UFOAY=140:UFOAMO
    V=1
QR  580 IF UFOAY<71 THEN UFOSIZEA=3:UFOCOL
    A=14
IW  585 IF UFOAY>70 AND UFOAY<116 THEN UFO
    SIZEA=1:UFOCOLA=10
KB  590 IF UFOAY>115 THEN UFOSIZEA=0:UFOCO
    LA=6
IB  595 POKE 53258,UFOSIZEA:POKE 706,UFOCO
    LA:A=USR(PMMOVE,3,SHAPE3,SIZE3,UFOAX,U
    FOAY)
YS  600 REM UFO 'B' CONTROL
QB  605 UFOBDIR=INT(RND(0)*15)+1:IF UFOBDI
    R<3 THEN 615
OH  610 GOTO 620
PV  615 UFOBMOV=INT(RND(0)*8)+1
EO  620 IF UFOBMOV=1 THEN UFOBY=UFOBY-10
CL  625 IF UFOBMOV=2 THEN UFOBX=UFOBX+10:U
    FOBY=UFOBY-10
AY  630 IF UFOBMOV=3 THEN UFOBX=UFOBX+10
ZZ  635 IF UFOBMOV=4 THEN UFOBX=UFOBX+10:U
    FOBY=UFOBY+10
EO  640 IF UFOBMOV=5 THEN UFOBY=UFOBY+10
DX  645 IF UFOBMOV=6 THEN UFOBX=UFOBX-10:U
    FOBY=UFOBY+10
GE  650 IF UFOBMOV=7 THEN UFOBX=UFOBX-10
IZ  655 IF UFOBMOV=8 THEN UFOBX=UFOBX-10:U
    FOBY=UFOBY-10
AB  660 IF UFOBX<15 THEN UFOBX=15:UFOBMOV=
    3
KG  665 IF UFOBX>208 THEN UFOBX=208:UFOBMO
    V=7
WD  670 IF UFOBY<10 THEN UFOBY=10:UFOBMOV=
    5
TE  675 IF UFOBY>140 THEN UFOBY=140:UFOBMO
    V=1
TT  680 IF UFOBY<71 THEN UFOSIZEB=3:UFOCOL
    B=14
NY  685 IF UFOBY>70 AND UFOBY<116 THEN UFO
    SIZEB=1:UFOCOLB=10
LU  686 IF STRIG(1)=0 THEN 686
NF  690 IF UFOBY>115 THEN UFOSIZEB=0:UFOCO
    LB=6
ZG  695 POKE 53259,UFOSIZEB:POKE 707,UFOCO
    LB:A=USR(PMMOVE,4,SHAPE4,SIZE4,UFOBX,U
    FOBY)
SB  700 REM MOVE MISSILE BASE
GI  705 IF FIRE=1 THEN 755
GK  710 ST=STICK(0):T=STRIG(0):POKE 77,0
BY  715 IF ST=11 THEN BASEX=BASEX-8:MISX=M
    ISX-8
XY  720 IF ST=7 THEN BASEX=BASEX+8:MISX=MI
    SX+8
QK  725 IF BASEX<50 THEN BASEX=50:MISX=50
XT  730 IF BASEX>194 THEN BASEX=194:MISX=1
    94
EJ  735 A=USR(PMMOVE,1,SHAPE1,SIZE1,BASEX,
    BASEY):A=USR(PMMOVE,2,SHAPE2,SIZE2,MIS
    X,MISY)
DV  740 IF T=0 THEN MISL=MISL-1:FIRE=1:GOT
    O 755
JR  744 IF MISL=0 THEN 870
QF  745 GOTO 505
TQ  750 REM FIRED MISSILE
HR  755 MISY=MISY-20
CW  760 IF MISY<0 THEN MIS=MIS+1:SOUND 0,0
    ,0,0:A=USR(PMMOVE,2,SHAPE2,SIZE2,0,0):
    MISY=173:FIRE=0:GOTO 505
RM  765 SOUND 0,MISY/19+19,0,15:A=USR(PMMO
    VE,2,SHAPE2,SIZE2,MISX,MISY)
VP  770 IF PEEK(53261)=4 AND UFOSIZEA=3 TH
    EN HIT=HIT+1:GOTO 800
SO  775 IF PEEK(53261)=8 AND UFOSIZEB=3 TH
    EN HIT=HIT+1:GOTO 835
PY  780 GOTO 505
JV  785 REM MISSILE HIT
RK  790 REM
BW  795 REM SAUCER 'A' HIT
NR  800 A=USR(PMMOVE,2,SHAPE2,SIZE2,0,0):S
    OUND 0,0,0,0
PO  805 FOR A=0 TO 75:SOUND 0,A*2,0,15:POK
    E 706,A*3:NEXT A
IV  810 A=USR(PMMOVE,3,SHAPE3,SIZE3,0,0):F
    OR V=15 TO 0 STEP -0.5:SOUND 0,A*2,0,V
    :NEXT V:SCR=SCR+100
ZZ  815 UFOAX=INT(RND(0)*208)+1:IF UFOAX<1
    5 THEN UFOAX=15
JC  820 POKE 706,6:UFOAY=140:POKE 53258,0:
    A=USR(PMMOVE,3,SHAPE3,SIZE3,UFOAX,UFOA
    Y):FIRE=0:MISY=173:SOUND 0,0,0,0
QC  825 GOTO 505
BN  830 REM SAUCER 'B' HIT
OM  835 A=USR(PMMOVE,2,SHAPE2,SIZE2,0,0):S
    OUND 0,0,0,0
QY  840 FOR A=0 TO 75:SOUND 0,A*2,0,15:POK
    E 707,A*3:NEXT A
MM  845 A=USR(PMMOVE,4,SHAPE4,SIZE4,0,0):F
    OR V=15 TO 0 STEP -0.5:SOUND 0,A*2,0,V
    :NEXT V:SCR=SCR+100
DG  850 UFOBX=INT(RND(0)*208)+1:IF UFOBX<1
    5 THEN UFOBX=15
YV  855 POKE 707,6:UFOBY=140:POKE 53259,0:
    A=USR(PMMOVE,4,SHAPE4,SIZE4,UFOBX,UFOB
    Y):FIRE=0:MISY=173:SOUND 0,0,0,0
PV  860 GOTO 505
HW  865 REM GAME OVER
WL  870 A=USR(PMMOVE,1,SHAPE1,SIZE1,0,0):A
    =USR(PMMOVE,2,SHAPE2,SIZE2,0,0):A=USR(
    PMMOVE,3,SHAPE3,SIZE3,0,0)
GV  875 A=USR(PMMOVE,4,SHAPE4,SIZE4,0,0):P
    OKE 53277,0:GRAPHICS 17:POKE 708,15
HC  880 POSITION 5,2:? #6;"GAME OVER":POSI
    TION 1,5:? #6;"MISSILES FIRED:50"
BO  885 POSITION 6,7:? #6;"HITS:";HIT:POSI
    TION 5,9:? #6;"MISSES:";MIS
AJ  890 BONUS=INT(HIT/5)*1000:POSITION 4,1
    1:? #6;"BONUS: ";BONUS:SCR=SCR+BONUS:P
    OSITION 4,15:? #6;"SCORE: ";SCR
EV  895 POSITION 0,18:? #6;"Press Start to
     play        again"
JH  900 IF PEEK(53279)=6 THEN POKE 106,PEE
    K(740):GRAPHICS 0:RUN
PF  905 GOTO 900
RV  10000 REM P/M DATA
UX  10005 POKE 623,1
ZV  10010 REM MISSILE BASE
LO  10015 DIM SHAPE1$(14):SHAPE1$="$fBf□□Z
```

continued on next page

```
   $Z[illegible]<[illegible]":SHAPE1=ADR(SHAPE1$):SIZE1=14
CE 10020 A=USR(PMMOVE,1,SHAPE1,SIZE1,BASE
   X,BASEY)
OI 10030 REM MISSILE
IN 10035 DIM SHAPE2$(23):SHAPE2$="[illegible]<<<[illegible]<
   <<<<<ffff[illegible]Z":SHAPE2=ADR(SHAPE2$):
   SIZE2=23
CB 10040 A=USR(PMMOVE,2,SHAPE2,SIZE2,MISX
   ,MISY)
QZ 10050 REM SAUCER 1
DV 10055 DIM SHAPE3$(7):SHAPE3$="[illegible]"
   :SHAPE3=ADR(SHAPE3$):SIZE3=7
CO 10060 A=USR(PMMOVE,3,SHAPE3,SIZE3,UFOA
   X,UFOAY)
SU 10065 REM SAUCER 2
LE 10070 DIM SHAPE4$(7):SHAPE4$="[illegible]"
   :SHAPE4=ADR(SHAPE4$):SIZE4=7
JX 10075 A=USR(PMMOVE,4,SHAPE4,SIZE4,UFOB
   X,UFOBY)
HT 19999 RETURN
XH 20000 REM P/M SETUP
MH 20010 REM (DEFINE PMMODE & GRMODE
OV 20015 REM BEFORE CALLING ROUTINE)
TN 20050 DIM PAGCLR$(48),PMMOVE$(202):PAG
   CLR=ADR(PAGCLR$):PMMOVE=ADR(PMMOVE$)
QD 20060 PAGCLR$="[illegible]"
QK 20070 PMMOVE$(1,67)="[illegible]"
FT 20072 PMMOVE$(68,134)="[illegible]"
JJ 20075 PMMOVE$(135,202)="[illegible]"
UX 20080 IF PMMODE=1 THEN PAGES=16:DMA=62
   :GOTO 20110
BE 20090 IF PMMODE=2 THEN PAGES=4:DMA=46:
   GOTO 20110
DB 20100 RETURN
WK 20110 POKE 54279,PEEK(106)-PAGES:POKE
   106,PEEK(106)-PAGES:POKE 207,PMMODE
MK 20120 GRAPHICS GRMODE
VN 20130 PMBASE=PEEK(106)*256:POKE 559,DM
   A:POKE 53277,3:X=USR(PAGCLR,PMBASE,PAG
   ES)
ZR 20135 REM P/M COLORS
NU 20140 POKE 704,0:POKE 705,28
DV 20150 RETURN
```

LISTING 2

```
VU 10 REM SAUCERIAN, LISTING 2
JS 20 REM BY JIM CATALANO
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
JJ 35 REM (CREATES LINES 20060-20075)
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
RD 80 ? "[illegible]Disk or [illegible]assette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "[illegible]TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "[illegible]TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? "[illegible]COMPLETED[illegible]
   "
GP 1000 DATA 341
KZ 1010 DATA 050048048054048032080065071O
   670760820360610341042010022400161332O6
   1620002282062080010961O4104
AJ 1020 DATA 232169000240244104133204104 1
   3320310410413320516900016817014520320 0
   208251230204232228205208244
VU 1030 DATA 096034155050048048055048032 0
   80007707790860690360400490440540550 41
   061034104201005240018141000
FF 1040 DATA 004162000236000004208001096 1
   041042321690002402431041042010091440 09
   104104104104104104104104096
GA 1050 DATA 024201000240242141004004104 1
   332061041332051041041410050041041041 41
   002004104104141003004034155
NH 1060 DATA 050048048055050032080077077 0
   790860690360400540560440490510520410 61
   034174004004173002004157255
PI 1070 DATA 207224005176002144005169000 1
   410040041652072010022400281651060241 05
   003109004004133204169000133
VM 1080 DATA 203168145203200208251173003 0
   041332030241440651651060241050011332 04
   169128133203173004034155050
SF 1090 DATA 048048055053032080077077079 0
   860690360400490510530440500048050041 061
   034004240021162000165203024
MM 1100 DATA 105128133203165204105000133 2
   042322360040042082371600001521452032 00
   192127208249173003004201128
FG 1110 DATA 144001096101203133203165204 1
   050001332041600002040050042400081772 05
   145203200024144243096034155
GP 1120 DATA 133
```

---

will the whole movie fit?

TAPE TIME

Article on page 16

LISTING 1

Don't type the TYPO II Codes!

```
YY 10 REM VCR TAPE TIME
ES 20 REM BY PAUL SHANNON
QH 30 REM (c)1988, ANTIC PUBLISHING
BA 40 GRAPHICS 0:POKE 752,1:POKE 710,0:DI
   M ERR$(6),HOLD$(6)
UN 50 ? " [illegible]
   [illegible] "
GZ 60 ? " [illegible]
   [illegible] "
FJ 70 ? " [illegible]
   [illegible] "
MT 80 ? " [illegible]APE[illegible]IME[illegible]
   [illegible] "
EF 90 ? " [illegible]
   [illegible] "
RS 100 ? " [illegible]A[illegible]VCR[illegible]
   [illegible] "
GU 110 ? " [illegible]UTILITY BY[illegible]
   [illegible] "
VX 120 ? " [illegible]PAUL SHANNON[illegible]
```

```
   ████▯▯ "
CT 130 ? " (C)1988 ANTIC ▯▯████████████████
   ████▯▯ "
MI 140 ? " ▬▬▬▬▬▬▬▬▬▬▬▬▬▬ ▯▯████████████████
   ████▯▯ "
WG 150 ? "▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▯████████████████
   ████▯▯ "
LO 160 ? "▯▯▯▯▯▯▯▯▯▬▬▬▬▬▬▯▯████████████████
   ████▯▯ "
BU 170 ? "▯        ▯       ▯▯▬▬▬▬▬▬▬▬▬▬▬▬▬▬
   ▬▬▬▬▯ "
ZH 180 ? "▯ ▯▯▯▯▯  ▬▬▬▬▬▬▬▯ █████        █
   ██  ▯ "
QK 190 ? "▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
   ▬▬▬▬▬ "
DN 200 ? "▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
   ▬▬▬▬▬"
RI 210 POSITION 2,19:? "████████████████
   ████████████████████"
UL 220 POSITION 2,20:? " ▯
       ▯ "
VE 230 POSITION 2,21:? " ▯
       ▯ "
QT 240 POSITION 2,22:? " ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
   ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬ "
JE 250 FOR J=1 TO 10:FOR L=2 TO 11
LA 260 POSITION 20,L:? "▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬"
   :POSITION 20,L:? "████████████████"
HM 280 NEXT L
GD 300 NEXT J
VT 320 GOSUB 1830
PI 330 FOR Z=1 TO 5:POSITION 12,12:? "12█
   ▯▯":FOR WAIT=1 TO 100:NEXT WAIT
ZE 340 POSITION 12,12:? "█████":FOR WAIT=
   1 TO 100:NEXT WAIT
MT 360 NEXT Z
IP 370 POSITION 12,12:? "12:00":GOTO 390
MF 380 CLR :DIM ERR$(6),HOLD$(6)
GC 390 POSITION 2,16:? "Do You Want: 1>BE
   TA 2>VHS"
LY 400 LINE=1:TRAP 1920
US 410 POSITION 27,16:INPUT A:GOSUB 1750:
   GOSUB 1830
QE 420 IF A<1 OR A>2 THEN 390
DV 430 IF A=1 THEN POSITION 12,12:? "BETA
   █"
RH 440 IF A=2 THEN POSITION 12,12:? "█VHS
   █"
ZC 450 IF A=1 THEN GOSUB 1830
AK 460 IF A=2 THEN 880
LX 470 REM BETA
MY 480 LINE=2:TRAP 1920
GM 490 POSITION 2,16:? "Is Your BETA Tape
    1>L-750 2>L-830":POSITION 36,16:INPU
   T TAPETYPE:GOSUB 1750
ZD 500 IF TAPETYPE<1 OR TAPETYPE>2 THEN 4
   80
MB 510 POSITION 2,16:? "Enter The Minutes
    BETA II"
MX 520 LINE=3:TRAP 1920
FE 530 POSITION 27,16:INPUT MINBII:GOSUB
   1750
NF 540 IF MINBII=0 THEN GOSUB 1710:GOTO 5
   80
HC 550 IF MINBII>900 THEN GOSUB 2080:GOTO
   510
MJ 560 TOTMINBII=TOTMINBII+MINBII
NX 570 GOTO 510
FV 580 IF TAPETYPE=1 THEN POSITION 23,2:?
    "BETA L-750":POSITION 22,3:? "▬▬▬▬▬▬▬
   ▬▬▬▬▬▬"
EQ 590 IF TAPETYPE=2 THEN POSITION 23,2:?
    "BETA L-830":POSITION 22,3:? "▬▬▬▬▬▬▬
   ▬▬▬▬▬▬"
RA 600 POSITION 22,5:? "Total Minutes":PO
   SITION 21,6:? "BETA II █";TOTMINBII
NG 610 LINE=4:TRAP 1920
PL 620 POSITION 2,16:? "Enter The Minutes
    BETA III"
RT 630 POSITION 28,16:INPUT MINBIII:GOSUB
    1750
CA 640 IF MINBIII=0 THEN 670
NO 645 IF MINBIII>900 THEN GOSUB 2080:GOT
   O 620
UK 650 TOTMINBIII=TOTMINBIII+MINBIII
OR 660 GOTO 620
VQ 670 POSITION 22,8:? "Total Minutes":PO
   SITION 21,9:? "BETA III █";TOTMINBIII
YG 680 FOR PAUSE=1 TO 200:NEXT PAUSE
JZ 690 DIM TAPE$(11)
SD 700 IF TAPETYPE=1 THEN TBII=180:TBIII=
   270:MET=222:TAPE$="█BETA L-750"
KC 710 IF TAPETYPE=2 THEN TBII=200:TBIII=
   300:MET=246:TAPE$="█BETA L-830"
DE 740 BIIMETER=(TOTMINBII/TBII)*MET
EK 750 BIIIMETER=(TOTMINBIII/TBIII)*MET
DS 760 TOTALMETER=BIIMETER+BIIIMETER
ON 770 TIMELEFTBII=((MET-TOTALMETER)/MET)
   *TBII:GOSUB 1710
SV 780 RO=INT(100*TIMELEFTBII+0.5)/100
IY 790 POSITION 22,2:? TAPE$:POSITION 21,
   3:? "▬▬▬▬▬▬▬▬▬▬▬▬▬"
DX 800 POSITION 21,5:? RO;"█Minutes":GOSU
   B 1790
CG 810 POSITION 21,6:? "BETA II Left"
ML 820 TIMELEFTBIII=((MET-TOTALMETER)/MET
   )*TBIII
ZL 830 ROIII=INT(100*TIMELEFTBIII+0.5)/10
   0
PD 840 POSITION 21,8:? ROIII;"█Minutes":G
   OSUB 1790
DR 850 POSITION 21,9:? "BETA III Left":GO
   SUB 1750
OY 860 GOTO 1380
PS 870 REM VHS
PA 880 LINE=7:TRAP 1920
KM 890 POSITION 2,16:? "Is Your VHS Tape:
   1>T-120 2>T-160":POSITION 35,16:INPUT
    VHSTYPE:GOSUB 1750
YA 900 IF VHSTYPE<1 OR VHSTYPE>2 THEN 880
QI 910 POSITION 2,16:? "Enter The Minutes
    SP"
OZ 920 LINE=8:TRAP 1920
UI 930 POSITION 22,16:INPUT MINSP:GOSUB 1
   750
HK 940 IF MINSP=0 THEN GOSUB 1710:GOTO 98
   0
XT 950 IF MINSP>900 THEN GOSUB 2080:GOTO
   910
FD 960 TOTMINSP=TOTMINSP+MINSP
PP 970 GOTO 910
RW 980 IF VHSTYPE=1 THEN POSITION 23,2:?
   "VHS T-120":POSITION 21,3:? "▬▬▬▬▬▬▬▬▬
   ▬▬▬▬"
ZU 990 IF VHSTYPE=2 THEN POSITION 23,2:?
   "VHS T-160":POSITION 21,3:? "▬▬▬▬▬▬▬▬▬
   ▬▬▬▬"
OZ 1000 POSITION 21,4:? "Total Minutes":P
   OSITION 21,5:? "SP Speed █";TOTMINSP
KV 1010 LINE=9:TRAP 1920
UL 1020 POSITION 2,16:? "Enter The Minute
   s LP"
LP 1030 POSITION 22,16:INPUT MINLP:GOSUB 1
   750
HP 1040 IF MINLP=0 THEN 1070
FT 1045 IF MINLP>900 THEN GOSUB 2080:GOTO
   1020
NN 1050 TOTMINLP=TOTMINLP+MINLP
OG 1060 GOTO 1020
PE 1070 POSITION 21,7:? "Total Minutes":P
   OSITION 21,8:? "LP Speed █";TOTMINLP
BR 1080 LINE=10:TRAP 1920
AW 1090 POSITION 2,16:? "Enter The Minute
   s EP(ELP)"
GI 1100 POSITION 27,16:INPUT MINEP:GOSUB
   1750
CF 1110 IF MINEP=0 THEN 1140
NO 1115 IF MINEP>900 THEN GOSUB 2080:GOTO
    1090
XC 1120 TOTMINEP=TOTMINEP+MINEP
RM 1130 GOTO 1090
KC 1140 POSITION 21,10:? "Total Minutes":
   POSITION 21,11:? "EP Speed █";TOTMINEP
CN 1150 FOR PAUSE=1 TO 200:NEXT PAUSE
AW 1160 DIM VHSTAPE$(11)
YO 1170 IF VHSTYPE=1 THEN TSP=120:TLP=240
   :TEP=360:MET=246:VHSTAPE$="█VHS T-120"
SZ 1190 IF VHSTYPE=2 THEN TSP=160:TLP=320
   :TEP=480:MET=327:VHSTAPE$="█VHS T-160"
YJ 1210 SPMETER=(TOTMINSP/TSP)*MET
KM 1220 LPMETER=(TOTMINLP/TLP)*MET
WP 1230 EPMETER=(TOTMINEP/TEP)*MET
AF 1240 TOTALMETERS=SPMETER+LPMETER+EPMET
   ER
SI 1250 TIMELEFTSP=((MET-TOTALMETERS)/MET
   )*TSP:GOSUB 1710
JL 1260 ROSP=INT(100*TIMELEFTSP+0.5)/100
SS 1270 POSITION 22,2:? VHSTAPE$:POSITION
   21,3:? "▬▬▬▬▬▬▬▬▬▬▬▬▬"
SF 1280 POSITION 21,4:? ROSP;"█Minutes"
QW 1290 POSITION 21,5:? "SP Speed Left"
RJ 1300 TIMELEFTLP=((MET-TOTALMETERS)/MET
```

continued on next page

```
   )*TLP
ZN 1310 ROLP=INT(100*TIMELEFTLP+0.5)/100
NF 1320 POSITION 21,7:? ROLP;" Minutes"
MD 1330 POSITION 21,8:? "LP Speed Left"
CT 1340 TIMELEFTEP=((MET-TOTALMETERS)/MET
   )*TEP
QO 1350 ROEP=INT(100*TIMELEFTEP+0.5)/100
NI 1360 POSITION 21,10:? ROEP;" Minutes":
   GOSUB 1810
PF 1370 POSITION 21,11:? "EP Speed Left":
   GOSUB 1750
CJ 1380 LINE=11:TRAP 1920
AZ 1390 POSITION 2,16:? "Want To 1)CONTIN
   UE 2)PRINT"
XV 1400 POSITION 28,16:INPUT X
KR 1410 IF X<1 OR X>2 THEN GOSUB 1750:GOT
   O 1380
MJ 1430 IF X=1 THEN GOSUB 1830:GOSUB 1750
   :GOTO 380
BB 1460 GOSUB 2060
CU 1470 LINE=12:TRAP 1920
VO 1480 REM PRINT
SO 1490 POSITION 2,17:? "Input Tape Numbe
   r"
OM 1500 INPUT I
VK 1510 LPRINT "# ";I
XQ 1520 IF A=1 THEN 1610
XN 1530 IF VHSTYPE=1 THEN LPRINT "VHS T-1
   20"
EH 1540 IF VHSTYPE=2 THEN LPRINT "VHS T-1
   60"
CZ 1550 LPRINT "---------"
JT 1560 IF X<>2 THEN 1590
XT 1570 LPRINT ROSP;"  Minutes SP Speed R
   emaining":LPRINT ROLP;"  Minutes LP Sp
   eed Remaining"
UK 1580 LPRINT ROEP;"  Minutes EP Speed R
   emaining"
BM 1590 GOSUB 2060
WX 1600 LPRINT :GOTO 1660
TX 1610 IF TAPETYPE=1 THEN LPRINT "BETA L
   -750"
TC 1620 IF TAPETYPE=2 THEN LPRINT "BETA L
   -830"
RY 1630 LPRINT "-----------"
RK 1640 LPRINT RO;"  Minutes BETA II Rema
   ining"
FY 1650 LPRINT ROIII;"  Minutes BETA III
   Remaining":GOSUB 2060
CU 1660 LPRINT :GOSUB 1830
DV 1670 GOSUB 1750
SQ 1680 GOTO 380
GA 1690 END
CN 1700 REM CLEAR SCREEN
CE 1710 FOR C=2 TO 11
QY 1720 POSITION 20,C:? "
   "
CY 1730 NEXT C
AZ 1740 RETURN
WV 1750 FOR CS=16 TO 18:POSITION 2,CS:? "
                                        "
   :NEXT CS
BL 1780 RETURN
SA 1790 TOTMINBII=0:TOTMINBIII=0
AP 1800 RETURN
AE 1810 TOTMINSP=0:TOTMINLP=0:TOTMINEP=0
AV 1820 RETURN
EF 1830 POSITION 20,2:? "                "
AV 1840 POSITION 20,3:? " Press RETURN  "
   :POSITION 20,4:? "  After Each   "
LX 1850 POSITION 20,5:? "     Entry
   "
XQ 1860 POSITION 20,6:? "
   "
IC 1870 POSITION 20,7:? "  Enter 0 When
   ":POSITION 20,8:? " Done Entering
   "
NR 1875 POSITION 20,9:? " For Each Speed
   "
JZ 1880 POSITION 20,10:? "
   "
KV 1890 POSITION 20,11:? "
   "
AR 1900 RETURN
NS 1910 REM ERROR TRAP
XT 1920 ERROR=PEEK(195)
DP 1930 GOSUB 1750
DZ 1940 IF ERROR=8 THEN POSITION 10,16:?
   "ENTER NUMBERS ONLY!":FOR WAIT=1 TO 15
   0:NEXT WAIT
DV 1950 GOSUB 1750
BD 1960 IF ERROR=8 THEN ON LINE GOTO 390,
   480,510,610,2060,2060,880,910,1010,108
   0,1380,1470
LF 2060 LPRINT "-----------------------
   --------"
AV 2070 RETURN
BG 2080 POKE 709,0:POKE 710,12:POKE 712,6
   6
CS 2090 ERR$=" ERROR ":TRAP 40000
NA 2100 FOR X0=1 TO 25:P0=INT(1.5+6*((X0/
   6)-INT(X0/6))):HOLD$=ERR$(P0,6)
HN 2110 IF P0<>1 THEN HOLD$(6-P0+2)=ERR$(
   1,P0-1)
PA 2120 POSITION 12^1,12:? HOLD$(1,5):NEX
   T X0
PW 2130 POKE 712,0:POKE 709,202:POKE 710,
   0
QG 2140 IF A=1 THEN POSITION 12,12:? "BET
   A "
DJ 2150 IF A=2 THEN POSITION 12,12:? " VH
   S "
AU 2160 RETURN
```

put a smile on your squares

HAPPYFACE REVERSI

Article on page 14

LISTING 1

Don't type the TYPO II Codes!

```
GX 2 REM HAPPYFACE REVERSI
XO 3 REM BY EDWARD BROWN
QS 4 REM (c)1988, ANTIC PUBLISHING
NI 5 GOTO 1535
SL 10 REM DISABLE BREAK
BU 15 RETURN :K=USR(ADR("hDPJ   RD JM "))
   :RETURN
UP 25 REM PURPLE THING
DI 30 COLOR 1:FOR CY=Y TO Y-7 STEP -1:PLO
   T X,CY:DRAWTO X-8,CY:NEXT CY
IT 35 COLOR 0:PLOT X-5,Y-6:PLOT X-5,Y-5:P
   LOT X-3,Y-6:PLOT X-3,Y-5
IQ 40 PLOT X-6,Y-1:DRAWTO X-2,Y-1:PLOT X-
   7,Y-2:PLOT X-6,Y-2:PLOT X-4,Y-2:DRAWTO
    X-1,Y-2
NJ 45 PLOT X-7,Y-3:PLOT X-1,Y-3:COLOR 0:L
   OCATE 155,89,D:RETURN
JN 50 REM GREEN THING
EE 55 COLOR 2:FOR CY=Y TO Y-7 STEP -1:PLO
   T X,CY:DRAWTO X-8,CY:NEXT CY
IM 60 COLOR 0:PLOT X-5,Y-6:PLOT X-5,Y-5:P
   LOT X-3,Y-6:PLOT X-3,Y-5
ZR 65 PLOT X-5,Y-1:DRAWTO X-3,Y-1:PLOT X-
   5,Y-2:DRAWTO X-3,Y-2:PLOT X-6,Y-3:PLOT
    X-2,Y-3:COLOR 0:LOCATE 155,89,D
ZX 70 RETURN
PH 75 REM TITLE SCREEN
XW 80 GRAPHICS 7:GOSUB 1700:POKE 710,74
XE 85 COLOR 3:PLOT 23,48:DRAWTO 42,21:DRA
   WTO 54,30:DRAWTO 34,34:DRAWTO 49,49:PL
   OT 65,35
ZL 90 DRAWTO 55,41:DRAWTO 65,48:PLOT 55,4
   1:DRAWTO 65,41:PLOT 71,35:DRAWTO 75,47
SH 95 DRAWTO 81,35:PLOT 94,35:DRAWTO 85,4
   1:DRAWTO 93,48:PLOT 85,41:DRAWTO 94,41
RY 100 PLOT 103,36:DRAWTO 98,49:PLOT 102,
   39:DRAWTO 109,37:DRAWTO 111,39:PLOT 12
   3,38
```

```
AA 105 DRAWTO 113,44:DRAWTO 122,42:DRAWTO
    111,52:PLOT 128,49:DRAWTO 132,38:PLOT
    135,33
XY 110 POKE 752,1:? "            DIEILOUI
   XIE                ":? "              by Edwar
   d Brown":? "            press START"
FO 115 C=1:STRT=0
OB 120 Y=15:FOR X=31 TO 136 STEP 15:SOUND
    0,28,6,8:IF C=1 THEN GOSUB 55:GOTO 13
   0
UB 125 GOSUB 30
ED 130 IF PEEK(53279)=6 THEN STRT=1
LJ 135 WAIT=1:GOSUB 1460:SOUND 0,0,0,0:NE
   XT X
BI 140 Y=75:FOR X=136 TO 31 STEP -15:SOUN
   D 0,50,6,8:IF C=1 THEN GOSUB 30:GOTO 1
   50
XJ 145 GOSUB 55
EH 150 IF PEEK(53279)=6 THEN STRT=1
CF 155 WAIT=1:GOSUB 1460:SOUND 0,0,0,0:NE
   XT X:IF STRT=0 THEN C=1-C:GOTO 120
ZJ 160 RETURN
DE 165 REM INITIALIZE
MN 170 DIM BOARD(10,10),VALUE(10,10),SCOR
   E(2),GP$(2),PP$(2),MES$(38),HC$(2)
BN 175 RESTORE :FOR C=0 TO 9:FOR C1=0 TO
   9:BOARD(C,C1)=0:READ A:VALUE(C,C1)=A:N
   EXT C1:NEXT C:CRY=1:CRX=1
LG 180 BOARD(4,4)=1:BOARD(5,5)=1:BOARD(4,
   5)=2:BOARD(5,4)=2:SCORE(1)=2:SCORE(2)=
   2
LE 185 DATA 0,0,0,0,0,0,0,0,0,0
TV 190 DATA 0,0,6,2,3,3,2,6,0,0,0,6,6,4,4
   ,4,4,6,6,0
FM 195 DATA 0,2,4,1,2,2,1,4,2,0,0,3,4,2,7
   ,7,2,4,3,0
TM 200 DATA 0,3,4,2,7,7,2,4,3,0,0,2,4,1,2
   ,2,1,4,2,0
FX 205 DATA 0,6,6,4,4,4,4,6,6,0,0,0,6,2,3
   ,3,2,6,0,0
KC 210 DATA 0,0,0,0,0,0,0,0,0,0
ZP 215 RETURN
XB 220 REM DRAW BOARD
JA 225 GRAPHICS 23:GOSUB 1700
VH 230 DL=PEEK(560)+PEEK(561)*256+4:POKE
   DL+93,2:POKE DL+94,65:POKE DL+137,PEEK
   (560):POKE DL+138,PEEK(561)
ES 235 C=C-48:IF A=78 THEN 275
YV 240 IF HC$="P" THEN S=1
VU 245 IF HC$="G" THEN S=2
JV 250 C1=1:C2=1
CM 255 X=31+C1*12-2:Y=1+C2*11-2:BOARD(C1,
   C2)=S:SCORE(S)=SCORE(S)+1:IF S=1 THEN
   GOSUB 30
MT 260 IF S=2 THEN GOSUB 55
VL 265 C=C-1:IF C>0 THEN C2=C2+7:IF C2>8
   THEN C2=1:C1=8
YG 270 IF C>0 THEN 255
ET 275 COLOR 3:FOR X=31 TO 127 STEP 12:PL
   OT X,1:DRAWTO X,89:NEXT X
LG 280 FOR Y=1 TO 89 STEP 11:PLOT 31,Y:DR
   AWTO 127,Y:NEXT Y
GA 285 X=31+(4*12)-2:Y=1+(4*11)-2:GOSUB 3
   0:X=31+(5*12)-2:Y=1+(5*11)-2:GOSUB 30
IR 290 X=31+(4*12)-2:Y=1+(5*11)-2:GOSUB 5
   5:X=31+(5*12)-2:Y=1+(4*11)-2:GOSUB 55
TO 295 I=PEEK(106)-8:POKE 54279,M
PX 300 PMBAS=M*256
VQ 305 FOR C=PMBAS+512 TO PMBAS+640:POKE
   C,0:NEXT C
FD 310 CXP=81:CYP=22:POKE 704,15:POKE 559
   ,46:POKE 53277,3
NA 315 POKE 623,0:POKE 53248,CXP:POKE PMB
   AS+512+CYP,12
ZD 320 RETURN
EW 325 REM MOVE CURSOR
GW 330 SWITCH=0:ST=STICK(TURN-1):CYT=CYP:
   IF ST=15 THEN 375
CF 335 XC=(ST=5 OR ST=6 OR ST=7)-(ST=9 OR
    ST=10 OR ST=11):CRX=CRX+XC:CXP=CXP+12
   *XC
FA 340 IF CXP>165 THEN CXP=81:CRX=1
HJ 345 IF CXP<81 THEN CXP=165:CRX=8
NJ 350 YC=(ST=5 OR ST=9 OR ST=13)-(ST=6 O
   R ST=10 OR ST=14):CRY=CRY+YC:CYP=CYP+1
   1*YC
MX 355 IF CYP>99 THEN CYP=22:CRY=1
AJ 360 IF CYP<22 THEN CYP=99:CRY=8
QS 365 POKE PMBAS+512+CYT,0:POKE 53248,CX
   P:POKE PMBAS+512+CYP,12
HA 370 SOUND 0,6,6,6:WAIT=10:GOSUB 1460:S
   OUND 0,0,0,0
NN 375 IF STRIG(TURN-1)=1 AND PEEK(764)<>
   33 AND PEEK(53279)=7 THEN 330
FN 380 IF PEEK(764)=33 THEN 395
JD 385 IF PEEK(53279)<>7 THEN GOSUB 1480:
   SWITCH=1:GOTO 395
HK 390 IF BOARD(CRX,CRY)<>0 THEN SOUND 0,
   41,2,6:WAIT=10:GOSUB 1460:SOUND 0,0,0,
   0:GOTO 330
AG 395 RETURN
XO 400 REM VALID? & SCORE
YG 405 LEGAL=0:ENEMY=2:IF TURN=2 THEN ENE
   MY=1
ZC 410 IF BOARD(CRX,CRY)<>0 THEN 495
KA 415 FOR C=-1 TO 1:FOR C1=-1 TO 1:IF C=
   0 AND C1=0 THEN 490
DK 420 IF BOARD(CRX+C,CRY+C1)<>ENEMY THEN
    490
MT 425 X2=CRX+C:Y2=CRY+C1:LAST=0
ZN 430 IF BOARD(X2+C,Y2+C1)=ENEMY THEN X2
   =X2+C:Y2=Y2+C1:GOTO 430
RK 435 IF BOARD(X2+C,Y2+C1)=0 THEN 490
KZ 440 IF CHK THEN 470
LB 445 X=31+X2*12-2:Y=1+Y2*11-2:IF BOARD(
   X2,Y2)<>TURN THEN SCORE(TURN)=SCORE(TU
   RN)+1
NU 450 IF BOARD(X2,Y2)=ENEMY THEN SCORE(E
   NEMY)=SCORE(ENEMY)-1
CG 455 BOARD(X2,Y2)=TURN
GU 460 IF TURN=1 THEN GOSUB 30
PB 465 IF TURN=2 THEN GOSUB 55
WV 470 IF LAST THEN 485
KV 475 X2=X2-C:Y2=Y2-C1:IF X2=CRX AND Y2=
   CRY THEN LAST=1:GOTO 440
OV 480 GOTO 440
BN 485 LEGAL=1
LP 490 NEXT C1:NEXT C
AH 495 RETURN
QN 500 REM TURN INDICATOR
DC 505 COLOR 0:IF TURN=2 THEN 520
UG 510 PLOT 130,35:DRAWTO 140,45:DRAWTO 1
   30,55:PLOT 130,45:DRAWTO 140,45
XA 515 COLOR 1:PLOT 28,35:DRAWTO 18,45:DR
   AWTO 28,55:PLOT 18,45:DRAWTO 28,45:GOT
   O 530
WU 520 PLOT 28,35:DRAWTO 18,45:DRAWTO 28,
   55:PLOT 18,45:DRAWTO 28,45
LC 525 COLOR 2:PLOT 130,35:DRAWTO 140,45:
   DRAWTO 130,55:PLOT 130,45:DRAWTO 140,4
   5
ND 530 COLOR 0:LOCATE 155,89,D:RETURN
SE 535 REM WINNER!
ZU 540 IF SCORE(1)>SCORE(2) THEN COL=7:ME
   S$="          Purple wins!          "
CX 545 IF SCORE(2)>SCORE(1) THEN COL=12:M
   ES$="          Green wins!
   "
UR 550 IF SCORE(2)=SCORE(1) THEN COL=5:ME
   S$="          Tie Score!            "
LA 555 GOSUB 585:POSITION 0,0:? SCORE(1);
   MES$;SCORE(2):GOSUB 605
EL 560 FOR C=15 TO 0 STEP -1:SETCOLOR 2,C
   OL,C
IH 565 FOR C1=1 TO 6:SOUND 0,253+C1,2,C:N
   EXT C1:NEXT C
ZR 570 IF STRIG(0)=1 AND STRIG(1)=1 THEN
   560
SE 575 SOUND 0,0,0,0:RETURN
GK 580 REM TEXT WINDOW
AT 585 POKE 87,0:TOP=PEEK(88)+PEEK(89)*25
   6
NP 590 TOP=TOP+3681:POKE 88,TOP-(INT(TOP/
   256)*256):POKE 89,INT(TOP/256):POSITIO
   N 0,0
AI 595 RETURN
DI 600 REM GRAPHICS WINDOW
LI 605 POKE 87,7:TOP=TOP-3681:POKE 88,TOP
   -(INT(TOP/256)*256):POKE 89,INT(TOP/25
   6):POSITION 0,0
ZE 610 RETURN
ZV 615 REM CHK FOR LEGAL MOVES
MA 620 YES=0:CHK=1:XT=CRX:YT=CRY:GOSUB 58
   5:? "          Checking...
       ":GOSUB 605
LK 625 FOR CRX=1 TO 8:FOR CRY=1 TO 8:IF B
   OARD(CRX,CRY)=0 THEN GOSUB 405:IF LEGA
   L THEN YES=1
KS 630 NEXT CRY:NEXT CRX
YO 635 IF  NOT YES THEN 650
```

continued on next page

```
LD 640 IF YES THEN GOSUB 585:POSITION 0,0
   :? "                    Yes you do!
   ":GOSUB 605
UD 645 SOUND 0,41,2,6:WAIT=160:GOSUB 1460
   :SOUND 0,0,0,0
WK 650 CRX=XT:CRY=YT:RETURN
KO 655 REM RECALC. VALUE & COMPUTER MOVE
WC 660 GOSUB 585:POSITION 0,0:? "
        Thinking...          ":GOSUB 605
SR 665 ENEMY=3-TURN:FOR C=1 TO 8:FOR C1=1
    TO 8 STEP 7:IF BOARD(C,C1)<>0 THEN PF
   =PF+1
KM 670 IF BOARD(C1,C)<>0 THEN PF=PF+1
GJ 675 NEXT C1:NEXT C:IF PF=0 THEN 1390
MU 680 REM CORNER BORDERS
ZF 685 FOR C=2 TO 7 STEP 5:FOR C1=1 TO 8
   STEP 7:VALUE(C,C1)=6:VALUE(C1,C)=6:NEX
   T C1:NEXT C
YJ 690 REM OPPONENT BORDERS
US 695 FOR C=3 TO 6:FOR C1=1 TO 8 STEP 7:
   IF BOARD(C-1,C1)=TURN OR BOARD(C+1,C1)
   =TURN THEN VALUE(C,C1)=5
MH 700 IF BOARD(C1,C-1)=TURN OR BOARD(C1,
   C+1)=TURN THEN VALUE(C1,C)=5
LP 705 NEXT C1:NEXT C
AG 710 REM IN BETWEEN MOVES
PM 715 FOR C=3 TO 6:FOR C1=1 TO 8 STEP 7:
   IF BOARD(C,C1)<>0 THEN 880
KT 720 IF BOARD(C-1,C1)<>TURN OR BOARD(C+
   1,C1)<>TURN THEN 770
OR 725 S=0:FOR C2=C-2 TO 1 STEP -1:IF BOA
   RD(C2,C1)=0 AND S=0 THEN S=1
ZP 730 IF BOARD(C2,C1)=ENEMY AND BOARD(C2
   -1,C1)=TURN AND S=0 THEN S=1
TS 735 NEXT C2:IF S=1 THEN S=0:GOTO 745
RW 740 GOTO 880
AM 745 FOR C2=C+2 TO 8:IF BOARD(C2,C1)=0
   AND S=0 THEN S=1
PQ 750 IF BOARD(C2,C1)=ENEMY AND BOARD(C2
   +1,C)=TURN AND S=0 THEN S=1
ST 755 NEXT C2:IF S=1 THEN VALUE(C,C1)=2:
   GOTO 880
BX 760 VALUE(C,C1)=5:GOTO 880
FY 765 REM CHECK IN-BETWEEN DEFENSE
SD 770 IF BOARD(C-1,C1)<>ENEMY OR BOARD(C
   +1,C1)<>TURN THEN 825
YP 775 S=0:FOR C2=C+2 TO 8:IF BOARD(C2,C1
   )=0 AND S=0 THEN S=1
TE 780 IF BOARD(C2,C1)=ENEMY AND S=0 THEN
    S=2
GQ 785 IF BOARD(C2,C1)=0 AND S=2 THEN S=3
DM 790 IF BOARD(C2,C1)=TURN AND S=2 THEN
   S=1
QC 795 NEXT C2:IF S=1 THEN S=0:GOTO 805
RP 800 GOTO 880
VY 805 FOR C2=C-2 TO 1 STEP -1:IF BOARD(C
   2,C1)=TURN AND S=0 THEN S=1
BW 810 IF BOARD(C2,C1)=0 AND S=0 THEN S=2
PN 815 NEXT C2:IF S=1 THEN VALUE(C,C1)=1:
   GOTO 825
AH 820 VALUE(C,C1)=5
WG 825 IF BOARD(C+1,C1)<>ENEMY OR BOARD(C
   -1,C1)<>TURN THEN 880
OF 830 S=0:FOR C2=C-2 TO 1 STEP -1:IF BOA
   RD(C2,C1)=0 AND S=0 THEN S=1
TK 835 IF BOARD(C2,C1)=ENEMY AND S=0 THEN
    S=2
FU 840 IF BOARD(C2,C1)=0 AND S=2 THEN S=3
DS 845 IF BOARD(C2,C1)=TURN AND S=2 THEN
   S=1
QK 850 NEXT C2:IF S=1 THEN S=0:GOTO 860
SO 855 GOTO 880
RB 860 FOR C2=C+2 TO 8:IF BOARD(C2,C1)=TU
   RN AND S=0 THEN S=1
CV 865 IF BOARD(C2,C1)=0 AND S=0 THEN S=2
QY 870 NEXT C2:IF S=1 THEN VALUE(C,C1)=1:
   GOTO 880
UW 875 VALUE(C,C1)=5
KF 880 IF BOARD(C1,C)<>0 THEN 1030
FF 885 IF BOARD(C1,C-1)<>TURN OR BOARD(C1
   ,C+1)<>TURN THEN 930
OU 890 S=0:FOR C2=C-2 TO 1 STEP -1:IF BOA
   RD(C1,C2)=0 AND S=0 THEN S=1
ZL 895 IF BOARD(C1,C2)=ENEMY AND BOARD(C1
   ,C2-1)=TURN AND S=0 THEN S=1
FU 900 NEXT C2:IF S<>1 THEN 1030
YG 905 S=0:FOR C2=C+2 TO 8:IF BOARD(C1,C2
   )=0 AND S=0 THEN S=1
VB 910 IF BOARD(C1,C2)=ENEMY AND BOARD(C1
   ,C2+1)=TURN AND S=0 THEN S=1
TE 915 NEXT C2:IF S=1 THEN VALUE(C1,C)=2:
   GOTO 925
AV 920 VALUE(C1,C)=5
LR 925 GOTO 1030
TZ 930 IF BOARD(C1,C-1)<>ENEMY OR BOARD(C
   1,C+1)<>TURN THEN 980
YM 935 S=0:FOR C2=C+2 TO 8:IF BOARD(C1,C2
   )=0 AND S=0 THEN S=1
TB 940 IF BOARD(C1,C2)=ENEMY AND S=0 THEN
   S=2
GN 945 IF BOARD(C1,C2)=0 AND S=2 THEN S=3
DJ 950 IF BOARD(C1,C2)=TURN AND S=2 THEN
   S=1
GT 955 NEXT C2:IF S<>1 THEN 1030
FG 960 S=0:FOR C2=C-2 TO 1 STEP -1:IF BOA
   RD(C1,C2)=TURN AND S=0 THEN S=1
CZ 965 IF BOARD(C1,C2)=0 AND S=0 THEN S=2
TE 970 NEXT C2:IF S=1 THEN VALUE(C1,C)=1:
   GOTO 980
BU 975 VALUE(C1,C)=5
AK 980 IF BOARD(C1,C+1)<>ENEMY OR BOARD(C
   1,C-1)<>TURN THEN 1030
PI 985 S=0:FOR C2=C-2 TO 1 STEP -1:IF BOA
   RD(C1,C2)=0 AND S=0 THEN S=1
TL 990 IF BOARD(C1,C2)=ENEMY AND S=0 THEN
    S=2
GX 995 IF BOARD(C1,C2)=0 AND S=2 THEN S=3
WF 1000 IF BOARD(C1,C2)=TURN AND S=2 THEN
    S=1
VG 1005 NEXT C2:IF S<>1 THEN 1030
SZ 1010 S=0:FOR C2=C+2 TO 8:IF BOARD(C1,C
   2)=TURN AND S=0 THEN S=1
LF 1015 IF BOARD(C1,C2)=0 AND S=0 THEN S=
   2
MD 1020 NEXT C2:IF S=1 THEN VALUE(C1,C)=1
   :GOTO 1030
OW 1025 VALUE(C1,C)=5
EA 1030 NEXT C1:NEXT C
MK 1035 REM EDGE UNDER ATTACK?
JK 1040 FOR C=3 TO 6:FOR C1=1 TO 8 STEP 7
   :IF BOARD(C,C1)<>ENEMY OR BOARD(C-1,C1
   )<>TURN THEN 1075
AG 1045 S=0:FOR C2=C+1 TO 8:IF BOARD(C2,C
   1)=0 AND S=0 THEN S=1
VT 1050 IF BOARD(C2,C1)=TURN AND S=0 THEN
    S=2
GB 1055 NEXT C2:IF S<>1 THEN 1075
JB 1060 S=0:FOR C2=C-2 TO 2 STEP -1:IF BO
   ARD(C2,C1)=ENEMY AND S=0 THEN S=1
WJ 1065 IF BOARD(C2,C1)=0 AND BOARD(C2-1,
   C1)<>TURN AND S=0 THEN S=1:VALUE(C2,C1
   )=1
ZY 1070 NEXT C2
CH 1075 IF BOARD(C,C1)<>ENEMY OR BOARD(C+
   1,C1)<>TURN THEN 1110
IL 1080 S=0:FOR C2=C-1 TO 1 STEP -1:IF BO
   ARD(C2,C1)=0 AND S=0 THEN S=1
WW 1085 IF BOARD(C2,C1)=TURN AND S=0 THEN
    S=2
UJ 1090 NEXT C2:IF S<>1 THEN 1110
BB 1095 S=0:FOR C2=C+2 TO 7:IF BOARD(C2,C
   1)=ENEMY AND S=0 THEN S=1
SF 1100 IF BOARD(C2,C1)=0 AND BOARD(C2+1,
   C1)<>TURN AND S=0 THEN S=1:VALUE(C2,C1
   )=1
ZZ 1105 NEXT C2
VK 1110 IF BOARD(C1,C)<>ENEMY OR BOARD(C1
   ,C-1)<>TURN THEN 1145
AC 1115 S=0:FOR C2=C+1 TO 8:IF BOARD(C1,C
   2)=0 AND S=0 THEN S=1
VP 1120 IF BOARD(C1,C2)=TURN AND S=0 THEN
    S=2
DN 1125 NEXT C2:IF S<>1 THEN 1145
IX 1130 S=0:FOR C2=C-2 TO 2 STEP -1:IF BO
   ARD(C1,C2)=ENEMY AND S=0 THEN S=1
UZ 1135 IF BOARD(C1,C2)=0 AND BOARD(C1,C2
   -1)<>TURN AND S=0 THEN S=1:VALUE(C1,C2
   )=1
ZR 1140 NEXT C2
QY 1145 IF BOARD(C1,C)<>ENEMY OR BOARD(C1
   ,C+1)<>TURN THEN 1180
IH 1150 S=0:FOR C2=C-1 TO 1 STEP -1:IF BO
   ARD(C1,C2)=0 AND S=0 THEN S=1
WS 1155 IF BOARD(C1,C2)=TURN AND S=0 THEN
    S=2
BX 1160 NEXT C2:IF S<>1 THEN 1180
AX 1165 S=0:FOR C2=C+2 TO 7:IF BOARD(C1,C
   2)=ENEMY AND S=0 THEN S=1
RR 1170 IF BOARD(C1,C2)=0 AND BOARD(C1,C2
   +1)<>TURN AND S=0 THEN S=1:VALUE(C1,C2
   )=1
AU 1175 NEXT C2
ER 1180 NEXT C1:NEXT C
LV 1185 REM COMPUTER HOLDS CORNERS?
```

```
YN 1190 A=1:B=1:AV=1:BV=1:AE=7:BE=7
SR 1195 IF BOARD(A,B)<>0 THEN VALUE(A+AV,B+BV)=4
PD 1200 IF BOARD(A,B)<>ENEMY THEN 1250
FG 1205 S=0:FOR C2=A+AV TO AE STEP AV:IF BOARD(C2,B)=0 AND S=0 THEN VALUE(C2,B)=2:S=1
GV 1210 IF BOARD(C2,B)=TURN AND S=0 THEN S=2
ZE 1215 IF BOARD(C2,B)=ENEMY AND S=2 THEN S=1
MX 1220 IF BOARD(C2,B)=0 AND S=2 THEN VALUE(C2,B)=2:S=1
JP 1225 NEXT C2:S=0:FOR C2=B+BV TO BE STEP BV:IF BOARD(A,C2)=0 AND S=0 THEN VALUE(A,C2)=2:S=1
GE 1230 IF BOARD(A,C2)=TURN AND S=0 THEN S=2
YN 1235 IF BOARD(A,C2)=ENEMY AND S=2 THEN S=1
KI 1240 IF BOARD(A,C2)=0 AND S=2 THEN VALUE(A,C2)=2:S=1
AN 1245 NEXT C2
ON 1250 IF A=1 AND B=1 THEN B=8:BV=-1:BE=2:GOTO 1195
QW 1255 IF A=1 AND B=8 THEN A=8:AV=-1:AE=2:GOTO 1195
GH 1260 IF A=8 AND B=8 THEN B=1:BV=1:BE=7:GOTO 1195
VV 1265 REM CORNER IN-BETWEEN MOVES?
LG 1270 A=1:B=1:V=1:E=7
PI 1275 IF BOARD(A,B)<>0 THEN 1310
KZ 1280 IF BOARD(A,B-V)<>TURN OR BOARD(A,B+V)<>TURN THEN 1310
MF 1285 S=0:FOR C2=B+2*V TO E STEP V:IF BOARD(A,C2)=0 AND S=0 THEN S=1
XN 1290 IF BOARD(A,C2)=ENEMY AND S=0 THEN S=2
IN 1295 IF BOARD(A,C2)=TURN AND S=2 THEN S=1
JL 1300 IF BOARD(A,C2)=0 AND S=2 THEN S=3
MM 1305 NEXT C2:IF S<2 THEN VALUE(A,B)=2
RI 1310 IF BOARD(B,A)<>0 THEN 1340
LR 1315 S=0:FOR C2=B+2*V TO E STEP V:IF BOARD(C2,A)=0 AND S=0 THEN S=1
WZ 1320 IF BOARD(C2,A)=ENEMY AND S=0 THEN S=2
HZ 1325 IF BOARD(C2,A)=TURN AND S=2 THEN S=1
JZ 1330 IF BOARD(C2,A)=0 AND S=2 THEN S=3
MT 1335 NEXT C2:IF S<2 THEN VALUE(B,A)=2
GL 1340 IF A=1 AND B=2 THEN B=7:V=-1:E=2:GOTO 1275
FZ 1345 IF A=1 AND B=7 THEN A=8:V=1:E=7:GOTO 1275
JN 1350 IF A=8 AND B=2 THEN B=7:V=-1:E=2:GOTO 1275
MA 1355 REM CORNERS VULNERABLE?
KK 1360 EN=ENEMY
GI 1365 IF BOARD(1,1)=0 AND BOARD(2,2)=TURN THEN IF BOARD(1,3)=EN OR BOARD(3,1)=EN THEN VALUE(1,3)=5:VALUE(3,1)=5
FI 1370 IF BOARD(1,8)=0 AND BOARD(2,7)=TURN THEN IF BOARD(1,6)=EN OR BOARD(3,8)=EN THEN VALUE(1,6)=5:VALUE(3,8)=5
DQ 1375 IF BOARD(8,1)=0 AND BOARD(7,2)=TURN THEN IF BOARD(6,1)=EN OR BOARD(8,3)=EN THEN VALUE(6,1)=5:VALUE(8,3)=5
YA 1380 IF BOARD(8,8)=0 AND BOARD(7,7)=TURN THEN IF BOARD(6,8)=EN OR BOARD(8,6)=EN THEN VALUE(6,8)=5:VALUE(8,6)=5
RT 1385 REM FIGURE COMPUTER MOVE
MU 1390 GOSUB 1445:CXT=CRX:CYT=CRY:V=0:ENEMY=3-TURN:CRX=1:CRY=1
YU 1395 IF VALUE(CRX,CRY)<>V THEN 1415
EL 1400 IF BOARD(CRX,CRY)<>0 THEN 1415
OC 1405 S=0:FOR C=-1 TO 1:FOR C1=-1 TO 1:IF BOARD(CRX+C,CRY+C1)=ENEMY THEN S=S+1
OL 1410 NEXT C1:NEXT C:IF S>0 THEN CHK=0:GOSUB 405:IF LEGAL THEN STK=0:GOTO 1435
HO 1415 CRY=CRY+1:IF CRY>8 THEN CRY=1:CRX=CRX+1
XZ 1420 IF CRX>8 THEN CRY=1:CRX=1:V=V+1
PT 1425 IF V<7 THEN 1395
FC 1430 GOSUB 585:POSITION 0,0:? "[clr]     I have no valid move    ":WAIT=160:GOSUB 1460:GOSUB 605:STK=STK+1
EF 1435 CRX=CXT:CRY=CYT:RETURN
KD 1440 REM RESET ATTRACT MODE
GK 1445 IF PEEK(77)>50 THEN BACK=PEEK(559):POKE 77,0:POKE 559,0:POKE 559,BACK
AW 1450 RETURN
BG 1455 REM WAIT
HV 1460 POKE 20,0
YN 1465 IF PEEK(20)<WAIT THEN 1465
BC 1470 RETURN
FZ 1475 REM SWITCH PLAYERS
WR 1480 OPEN #4,4,0,"K:":GOSUB 585
JT 1485 POSITION 0,0:? " Switch Purple to ";
TK 1490 IF PP$="H" THEN ? "Computer (Y,N)?     ":GET #4,A:IF A=89 THEN PP$="C":GOTO 1500
GQ 1495 IF PP$="C" THEN ? "Human (Y,N)?     ":GET #4,A:IF A=89 THEN PP$="H"
MH 1500 IF A<>89 AND A<>78 THEN 1485
YW 1505 POSITION 0,0:? " Switch Green to ";
NO 1510 IF GP$="H" THEN ? "Computer (Y,N)?     ":GET #4,A:IF A=89 THEN GP$="C":GOTO 1520
FM 1515 IF GP$="C" THEN ? "Human (Y,N)?     ":GET #4,A:IF A=89 THEN GP$="H"
DW 1520 IF A<>89 AND A<>78 THEN 1505
UY 1525 GOSUB 605:CLOSE #4:RETURN
QG 1530 REM MAIN PROGRAM
DZ 1535 CLR :GOSUB 170:M=PEEK(106):M=M-16:POKE 106,M
YX 1540 GOSUB 80
HN 1545 OPEN #4,4,0,"K:"
IQ 1550 GRAPHICS 17:GOSUB 1700:POKE 711,24:POKE 712,96
JZ 1555 POSITION 0,5:? #6;"PURPLE player Human or Computer?"
BK 1560 GET #4,A:PP$=CHR$(A):IF PP$<>"H" AND PP$<>"C" THEN 1550
WJ 1565 POSITION 0,8:? #6;"green player human  or computer?"
KW 1570 GET #4,A:GP$=CHR$(A):IF GP$<>"H" AND GP$<>"C" THEN 1565
WO 1575 GRAPHICS 17:GOSUB 1700
FX 1580 POSITION 0,5:? #6;"HANDICAP (Y OR N)?":GET #4,A:IF A<>78 AND A<>89 THEN 1580
WM 1585 IF A=78 THEN 1600
ZS 1590 POSITION 0,8:? #6;"IN FAVOR OF PURPLE OR gREEN?":GET #4,A:HC$=CHR$(A):IF A<>80 AND A<>71 THEN 1590
CH 1595 POSITION 0,11:? #6;"HOW MANY CORNERS (1-4)?":GET #4,C:IF C<49 OR C>52 THEN 1595
IR 1600 CLOSE #4:GOSUB 225
WN 1605 TURN=1:IF PP$="C" THEN GOSUB 505:GOSUB 660:GOTO 1640
XZ 1610 GOSUB 585:POSITION 0,0:? "  Press SPACE BAR if no legal move":GOSUB 605
JS 1615 GOSUB 505:GOSUB 330:IF PEEK(764)=33 THEN POKE 764,255:GOSUB 620:IF  NOT YES THEN CHK=0:STK=STK+1:GOTO 1640
PC 1620 IF CHK THEN CHK=0:GOTO 1605
XB 1625 IF SWITCH THEN 1605
UP 1630 GOSUB 405:IF  NOT LEGAL THEN SOUND 0,41,2,6:FOR C=1 TO 30:NEXT C:SOUND 0,0,0,0:GOTO 1615
AR 1635 STK=0
KV 1640 IF SCORE(1)+SCORE(2)=64 OR SCORE(1)=0 OR SCORE(2)=0 OR STK=2 THEN 1685
AM 1645 TURN=2:IF GP$="C" THEN GOSUB 505:GOSUB 660:GOTO 1680
YL 1650 GOSUB 585:POSITION 0,0:? "  Press SPACE BAR if no legal move":GOSUB 605
BC 1655 GOSUB 505:GOSUB 330:IF PEEK(764)=33 THEN POKE 764,255:GOSUB 620:IF  NOT YES THEN CHK=0:STK=STK+1:GOTO 1680
UI 1660 IF CHK THEN CHK=0:GOTO 1645
BB 1665 IF SWITCH THEN 1645
JF 1670 GOSUB 405:IF  NOT LEGAL THEN SOUND 0,41,2,6:FOR C=1 TO 30:NEXT C:SOUND 0,0,0,0:GOTO 1655
BD 1675 STK=0
XJ 1680 IF SCORE(1)+SCORE(2)<>64 AND SCORE(1)<>0 AND SCORE(2)<>0 AND STK<2 THEN 1690
PW 1685 POKE 53248,0:GOSUB 540:GOSUB 175:GOTO 1545
TN 1690 GOTO 1605
RN 1700 POKE 708,86:POKE 709,196:POKE 710,232:GOSUB 15:RETURN
```

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Tech Tips

HI-RES GRAPHICS 8

This graphics demonstration is by Clay Halliwell, a computer science major at Southwest Missouri State University.

According to the official manuals, Graphics 8 is a bit-mapped mode with a resolution of 320 x 192—and only two colors. Of course, most programmers know this isn't quite true. In this mode, the pixels plotted in even columns are blue, odd-column pixels are green, and two or more adjacent pixels produce white. This often-discussed effect is commonly known as "artifacting."

Actually, the following strange technique has been around for years. You see, Graphics 8 is backwards! An average Graphics 8 screen might have the background set at luminance 0 (dark) and the drawing color at luminance 10 (bright).

Let's take the drawing color and fill in every point on the screen. An entirely filled screen is very white and painful to look at. But you can swap the colors by changing the full-screen drawing color (which is now effectively the background) to a darker luminance 0. Then change the background color to a brighter luminance 10.

The screen is again black, except you now turn bits on instead of off to draw (or just use COLOR 0). We have entered Graphics 8 Plus. As shown in the demonstration program below, Graphics 8+ differs from regular Graphics 8 in the following ways. Pixels are sharper, brighter, and less prone to bleeding. Artifact colors are much more solid-looking and don't have the vertical "hum-lines" present on some TV sets. On monochrome displays all pixels present a uniform luminance. Also, all of the above applies to Graphics 0 as well.

Don't type the TYPO II Codes!

```
KH 1 REM HI-RES GRAPHICS 8 DEMO
PY 2 REM BY CLAY HALLIWELL
NI 3 REM
BW 10 DIM SCRN1$(7680),SCRN2$(7680)
UT 15 MOV=ADR("hh■Wh■Uh■Yh■Xh■Zh■■■1U■XHP
   ■fWfYJPrFZ■n■"):POKE 77,131
NJ 17 SCRN1$(1)="■":SCRN1$(7680)=SCRN1$:S
   CRN1$(2)=SCRN1$:SCRN2$=SCRN1$
XP 20 GRAPHICS 8+16:POKE 709,10:POKE 710,
   0
JR 30 COLOR 1:GOSUB 1000:GOSUB 2000
IR 35 SAVMSC=PEEK(88)+PEEK(89)*256:I=USR(
   MOV,SAVMSC,ADR(SCRN1$),7680)
CG 60 GRAPHICS 8+16:REM FAST SCREEN FILL
YZ 65 POKE SAVMSC,255:I=USR(MOV,SAVMSC,SA
   VMSC+1,7679)
LR 70 POKE 709,0:POKE 710,10
UF 80 COLOR 0:GOSUB 1000:GOSUB 2000:I=USR
   (MOV,SAVMSC,ADR(SCRN2$),7680)
HU 90 POKE 77,0
WA 100 GRAPHICS 8:POKE 559,0:POKE 709,10:
   POKE 710,0:I=USR(MOV,ADR(SCRN1$),SAVMS
   C,7680):POKE 752,1
SM 110 ? "■This is how Mode 8 normally lo
   oks.":? "Press any key for the Magic o
   f Hi-Res":? ,"GRAPHICS 8+..."
OZ 115 ? "(Press any to return here.)";
BS 120 POKE 559,34:GOSUB 300
VF 130 GRAPHICS 8+16:POKE 559,0:POKE 709,
   0:POKE 710,10:I=USR(MOV,ADR(SCRN2$),SA
   VMSC,7680)
RB 140 POKE 559,34
YP 150 GOSUB 300:GOTO 100
TH 300 POKE 764,255:REM WAIT FOR KEY
HI 310 POKE 77,0:IF PEEK(764)=255 THEN 31
   0
XH 320 POKE 764,255:RETURN
QA 999 REM DRAW ARTIFACT BLOCKS
EM 1000 X=10:Y=10:INC=1:GOSUB 1500
HW 1010 X=10:Y=60:INC=2:GOSUB 1500
WU 1020 X=11:Y=110:INC=2:GOSUB 1500
AI 1030 RETURN
AA 1499 REM DRAW
XL 1500 FOR X1=X TO 50 STEP INC:PLOT X1,Y
   :DRAWTO X1,Y+40:NEXT X1:RETURN
FV 1999 REM DRAW LINES
LR 2000 FOR I=60 TO 319 STEP 15:PLOT 189,
   160:DRAWTO I,100:DRAWTO 379-I,0:NEXT I
TS 2010 PLOT 270,30:DRAWTO 290,50:DRAWTO
   270,70:DRAWTO 250,50:DRAWTO 270,30:RET
   URN
```

DOSINI HOUDINI

Running a machine language routine on [RESET] is tricky. While nothing happens to your Atari's built-in RESET routine itself (location 61723), DOSINI (memory locations 12 and 13) is affected. The RESET routine jumps to the operating system's warm-start routine WARMSV (58484, $E474). But DOSINI is executed during warm-start, so we can use DOSINI to trap [RESET].

To do this, you must store the low byte of your routine's starting address into location 12, and the high byte in location 13. However, DOSINI MUST be executed. The first instruction in your routine MUST be a JSR to the original DOSINI starting location.

Now when you press [RESET], the operating system jumps to what it *thinks* is DOSINI but is actually your program. Then your *program* will JSR to the real DOSINI, and when it returns, the operating system will continue on its merry way, running the rest of your machine language program.

Greg Vozzo is from Brightwaters, New York. This is his first appearance in Antic.

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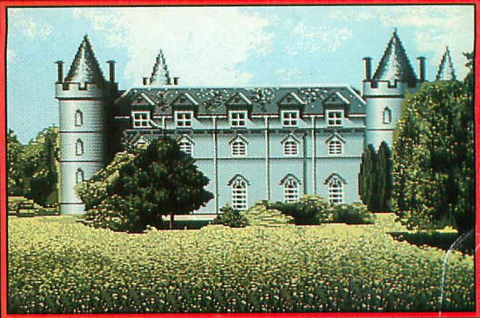
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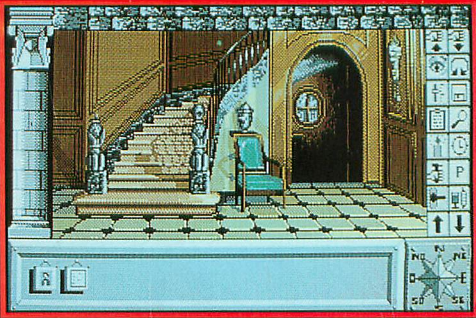
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